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POWER LINE PANIC AND CELL PHONE MANIA

Why Cell Phones and Power Lines Aren't Health Hazards

Violent Video Games
Moral Panic and Social Pseudoscience

NDE Experiment Raises Questions

Subliminal Persuasion: Does It Work?

ROM: Miracle Exercise Machine?

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Editor's Note

Cell Phones, Power Lines, Video Games…and Much Else

This issue demonstrates not only the variety of topics we tackle in the SKEPTICAL INQUIRER but also the multitude of countries our distinguished authors hail from.

We begin with two fine pieces on why cell phones and power lines aren't health hazards—as some activists continue to contend despite evidence to the contrary. The first is by a scientist at India's National Physical Laboratory, S.T. Lakshmikumar. In common with many SI authors he has a passionate interest in (and an obvious knack for) communicating about science to the public. In "Power Line Panic and Mobile Mania," he provides a valuable tutorial on what scientists mean when they say there is no physical basis for a linkage between cancer and either cell phones or power lines. In "EMF and Health: A Growing Hysteria," Lorne Trottier, founder of a Canadian high-tech company and an electrical engineer, contrasts evidence-based science about electromagnetic fields and health—which has found no health consequences from exposure to low-level electromagnetic fields—with alarmist groups "fueling a growing mass hysteria over supposed health risks from EMF."

Clinical and forensic psychology professor Christopher J. Ferguson explores another topic "at the center of a modern media-based moral panic"—violent video games. He provides an informed exposition (and critique) of social-science research on the subject and contends that some social scientists have abandoned objectivity and skepticism to adapt an activist agenda similar to that of pressure groups.

One would think experiments in hospital operating rooms to actually test the claim that patients who undergo supposed near-death experiences can somehow perceive something not visible from their comatose position would merit the support of skeptics. Some prominent skeptical psychologists in the U.K. do support this multi-national AWARE (AWAreness during REsuscitation) study, as you will see. But Sebastian Dieguez of the Brain Mind Institute at the Swiss Polytechnique Fédérale de Lausanne is troubled by the effort. He shares his concerns in this issue.

And so it goes. Experimental psychologists Brandon Randolph-Seng and Robert Mather provide a new assessment of recent psychological research on subliminal awareness and persuasion. Investigator and SI managing editor Ben Radford tries out an exercise machine called ROM (Range of Motion) and asks whether instead it should be called a Rip-Off Machine. U.K. psychologists Richard Wiseman, Chris French, and Caroline Watt test whether adding disclaimers about paranormal-themed TV shows makes any difference. NASA scientist Stuart Jordan reports on a new study showing that few of the scientists signing a U.S. senators' anti-global-warming petition are climate scientists. Martin Gardner considers genius and idiocy (in the same person). Robert Sheaffer ponders the pseudoscience of Stanton Friedman's anti-anti-UFOology. And regular columnist Massimo Polidoro of Italy gives us part three of his revealing continuing series on medium Eusapio Palladino.

We also add something new with this issue: a humor page. It's The Last Laugh, on the last page. Martin Gardner likes to quote Mencken's "One horse-laugh is worth ten thousand syllogisms," and if you can't find humor in some of the topics we examine, there may be something wrong. But I think you will.

—KENDRICK FRAZIER

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The Questionable Research of Hans Holzer, Dean of Ghost Hunters (1920–2009)

JOE NICKELL

During the second half of the twentieth century, "Dr." Hans Holzer, a self-styled parapsychologist who died April 2, 2009, at the age of eighty-nine, was the dean of ghost hunters. Attracted to the supernatural in childhood, he went on to pen over a hundred books on occult subjects. He was also a Wiccan high priest and claimed to have had past lives—for instance, supposedly having been present at the 1692 "Battle" of Glencoe ("Hans Holzer" 2009a).

Dubious Background

Holzer—who was born in Vienna, Austria, on January 26, 1920—used to enthrall his fellow kindergarten pupils with ghost tales that he pretended to read but actually only "made out of whole cloth" (Holzer 1963, 9). By age six he was guilty of "regaling my mother's family in Moravia with tales told me, allegedly, by the wood sprites in the trees along the little river that flows through the city of Bruenn"—tales "about as far from factuality as you can go" (Holzer 1968, 10). Such antics set the stage for Holzer to become not the scientific "parapsychologist" he posed as but one of the most successful raconteurs of "true" hauntings.

After a brief career as associate editor of a "scientific" antiquities magazine, he became a freelance writer and—by about 1951—a ghost hunter (Holzer 1963, 14–15, 211). Of uncertain date, his alleged doctorate in parapsychology was from what *The Daily Telegraph* in London (May 4, 2009) called "an elusive London College of Applied Science (not, it appears, London, England)." Holzer (1963, 10) stated:

> I am a professional investigator of ghosts, haunted houses, and other "spontaneous" phenomena, to use the scientific term—that is, anything of a supernormal nature, not fully explained by orthodox happenings, and thus falling into the realm of parapsychology or psychic research.

Holzer cranked out book after mystery-mongering book, such as *Haunted House Album* (1971) and *America's Haunted Houses* (1991), in which he reported on his "investigations" of supposedly haunted sites.

He is credited by Wikipedia with coining the terms *The Other Side* and (for the title of his first paranormal book, published in 1963) *Ghost Hunter* ("Hans Holzer" 2009c). In fact, however, the first term appears in the title of at least one nineteenth-century book, *"I Awoke": Conditions of Life on the Other Side Communicated by Automatic Writing* (1895), and Holzer's antecedent, Harry Price (1881–1948), published a book in 1936 titled *Confessions of a Ghost Hunter*.

"Investigations"

Holzer decried today's so-called paranormal investigators, whom he portrayed as "running around with Geiger counters and cameras and instruments that can measure cold spots"—a method he noted that "really is bullshit" (2005).

His own "scientific" approach was at least as bogus. He took along an alleged "medium" who, after getting "impressions" and supposedly going into a trance, invariably claimed to substantiate the haunting, sometimes even letting the alleged spirit speak using her vocal cords. Holzer's most famous case was the "Amityville Horror," in which he relied on a reputed medium named Ethel Johnson Meyers and wrote several books on the subject. Meyers asserted that the house—wherein Ronald DeFeo murdered his parents and siblings—had been built atop an ancient Shinnecock Indian burial ground and was haunted by the angry spirit of Chief "Rolling Thunder." In fact, the Amityville Historical Society could find no connection between the site and Native Americans and pointed out that in any case it was not the Shinnecocks but the Montaukett Indians who had settled the area. Worse, the Amityville haunting tale proved to have been a hoax (Nickell 2004, 73–77).

In trying to sell Amityville spookiness, Holzer also published "photographs of bullet holes from the 1974 murders in which mysterious halos appeared" (Grimes 2009). Actually, the single bullet-strike photo appearing in *Murder in Amityville* (Holzer 1979, 158) is labeled a "psychic photograph," was made under questionable (certainly not forensic) conditions, and exhibits overall blurring (apparently due to movement of the camera when the picture was snapped). What Holzer terms an "auric imprint" may be nothing more than, say, light reflecting from impact-beveling around the bullet hole—if, indeed, it *is* a bullet hole. (Holzer never used that term, referring to "strange haloes exactly where the bullets had struck" [Holzer 1991, 177].)

Holzer's work was once examined in the *Journal of the Society for Psychical Research* (December 1970). He had taken two mediums to a reputedly haunted house, where they made certain pronouncements:

> They identified the ghost as Nell Gwyn and gave the cause of the haunting as the murder of one of her lovers on orders from Charles II who had given the house to her. She was supposed to have acted at the adjacent Royalty Theatre. It was also stated that the house had formerly housed the Royal Stables.

Unfortunately, however,

> The JSPR article reveals that just about everything the mediums said was incorrect, the house not having been built until after Nell Gwyn's death, the theatre not having been built until about 150 years later, and the Royal Stables never having been located anywhere near the site. "Whatever may be the truth about the

> ESP investigations carried out by Mr. Holzer, his treatment of his historical sources is so unsatisfactory, on the evidence of this case, as to cast considerable doubt on the objectivity and reliability of his work as a whole." (quoted in Berger and Berger 1991, 183)

I reached a similar opinion of Holzer's work, especially after I reinvestigated his claims regarding Ringwood Manor in northern New Jersey. Holzer had arrived at Ringwood with Ethel Johnson Meyers in tow. There she supposedly made contact with the spirits of two former servants but without proof that either had ever existed. One was said to be responsible for ghostly footsteps in the house, while the other, "Jeremiah," "complained bitterly about his mistress," Mrs. Robert Erskine. Of the latter, Holzer stated: "The ghost lady whose manor we were visiting was not too pleased with our presence. Through the mouth of the medium in trance, she told us several times to get off her property! She may still be there," Holzer added glibly, "for all I know" (Holzer 1991, 125).

When I visited Ringwood in 1993, I found the curator, Elbertus Prol, annoyed with Holzer's account. As a senior historic preservation specialist who had been at Ringwood for a quarter of a century, Prol discounted claims that the house was haunted. He had never seen anything of a paranormal nature about the house and insisted, "I don't believe in ghosts." He emphatically discounted the Meyers/Holzer claim that Mrs. Erskine mistreated a servant—whether named "Jeremiah" or not. He observed that the present house was never seen by Mrs. Erskine. In fact, he added, "the area of the house isn't even near the location of the original house!" (quoted in Nickell 1995, 62). Thus when Holzer wrote, "The center of the hauntings seems to be what was once the area of Mrs. Erskine's bedroom" (Holzer 1991, 126), he betrayed an utter lack of historical credibility.

From Beyond?

Holzer was a skeptic of religion, much of which he termed "man made," although he advocated having "a spiritual concept of life" and, of course, believed in "the other side." From there, according to one of his two daughters (possibly Alexandra, who fancies she is psychic), Holzer communicated soon after his death on April 26. He reportedly sent "his heartfelt 'thanks'" to London's *The Daily Telegraph* ("Hans Holzer" 2009a) in anticipation of his obituary. But what if that alleged communication is as bogus as those that emanated from Holzer on *this* side?

Acknowledgments

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References

Berger, Arthur S., and Joyce Berger. 1991. *The Encyclopedia of Parapsychology and Psychical Research*. New York: Paragon House.

Grimes, William. 2009. Hans Holzer, "Amityville" writer, dies. *New York Times*, May 2.

"Hans Holzer." 2009a. Obituary, London *Daily Telegraph*, May 4.

———. 2009b. *The Economist*, May 7.

———. 2009c. Available online at http://en.wikipedia.org/wiki/Hans_Holzer. Accessed May 6, 2009.

Holzer, Hans. 1963. *Ghost Hunter*. New York: Ace Books.

———. 1968. *Psychic Investigator*. New York: Hawthorn Books.

———. 1971. *Haunted House Album: A Ghostly Register of the World's Most Frightening Haunted Houses*. New York: Dorset Press.

———. 1979. *Murder in Amityville*. New York: Tower Publications.

———. 1991. *America's Haunted Houses*. Stamford, Connecticut: Longmeadow Press.

———. 2005. Interview by Jeff Belanger, February 7. Available online at www.ghostvillage-.com/legends35_02072005.shtml; accessed May 6, 2009.

Nickell, Joe. 1995. *Entities: Angels, Spirits, Demons, and Other Alien Beings*. Amherst, N.Y.: Prometheus Books.

———. 2004. *The Mystery Chronicles: More Real-Life X-Files*. Lexington, Ky.: University Press of Kentucky.

Skeptic's Web Site Becomes Advertising for Psychic Business

In October, a Hollywood-based Web site selling psychic consultations and other products acquired a notable skeptic's Web site while he recovered from a stroke. Beginning in 2006 Robert Lancaster, a Web designer and skeptic, authored StopSylviaBrowne.com, examining alleged psychic Sylvia Browne. That original Web site has been replaced by a pseudo-skeptical site that promotes psychic readings from LifePsychic.com. Prior to this, Lancaster critically examined Browne's predictions, fraud conviction, missing-persons claims, and her books, earning a wide audience of skeptics and sowing doubt in believers.

In early 2007 Lancaster's Web site broke the story of Browne's failed Shawn Hornbeck prediction in which Browne told the parents of the missing child he was dead, but he was later discovered alive (See "Sylvia Browne's Biggest Blunder" in the May/June 2007 SKEPTICAL INQUIRER). Lancaster subsequently appeared with James Randi on CNN's *Anderson Cooper 360*. From this, StopSylviaBrowne.com received national attention, and traffic to the site rapidly increased. Noticing the bad publicity, Browne's publisher Hay House contacted Lancaster via an attorney threatening to sue over copyrighted material and use of the name Sylvia Browne. Lancaster's attorney replied, in part: "There is simply no place in a free society for the suppression of dissent about a subject of public interest," and no legal action was taken.

Ministers in Browne's church (and even her ex-husband, father of psychic Chris Dufresne) came forward and added information to the Web site. Interest continued to build as Lancaster conducted more media appearances and speaking engagements promoting skepticism.

Lancaster explored many of Browne's failures not covered in the press, for example the story of Gwendolyn Krewson whose daughter, Holly Krewson, went

missing in 1995. In 2002, Gwendolyn appeared on the *Montel Williams Show* for information about Holly when Browne told her, "She is in Los Angeles . . . on drugs. But she's still alive." Browne then said Holly was working as a stripper. This led Holly's family to spend many weekends traveling from San Diego to search Hollywood strip clubs. As Lancaster reported, Browne was wrong. In 2006 police matched Holly's dental records to a body discovered near Descanso, in San Diego County, in 1996. Gwendolyn Krewson never learned of her daughter's fate, as she died of an aneurysm three years earlier in 2003. Despite this sad story, Gwendolyn's son and Holly's brother, Tim Krewson, wrote to Lancaster thanking him for the Web site.

In August 2008, Lancaster suffered a stroke that paralyzed his left side, and he has remained in the hospital ever since. James Randi promoted a fund to help with hospital expenses noting, "He is a resounding force in the skeptical world and has fought the Bad Guys effectively and diligently."

While he was recovering in the hospital, the domain registration for StopSylviaBrowne.com lapsed. Lancaster's wife was unable to check his e-mail accounts and thus received no warnings about the expired registration. Subsequently, Web host GoDaddy.com auctioned the domain when it was not renewed, and StopSylviaBrowne.com was purchased by Boris Kreiman. Kreiman's version of the site had a pseudo-skeptical introduction that warns readers of "false psychics." Yet notably, links to LifePsychic.com for "tarot readings" or "psychic readings" from phone psychics are found on every page. It should come as no surprise that LifePsychic.com is also registered to Kreiman, who owns nearly 200 domain names of a wide variety of enterprises.

When Kreiman's procurement of StopSylviaBrowne.com generated interest from skeptics, he offered to sell it for $20,000 and then simultaneously listed it for sale on eBay and SitePoint Marketplace. Both auction services pulled the sale when it was revealed that the domain was being sold on two different Web sites. Following a public outcry from skeptics, the Web master replaced his pseudo-skeptical format with comments criticizing his detractors, a psychic challenge promoting LivePsychic.com, and a challenge for a chess game against James Randi.

STOP
SYLVIA BROWNE
A look at the claims, predictions and behavior of a media "psychic".
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"Is she a well-intentioned spiritual leader, with actual psychic powers? Is she a fraud, making money by callously manipulating and using the bereaved? Or is she something else entirely?"
Sylvia Browne on her official web site
Notice about Robert S. Lancaster

Such behavior is not surprising from those who make money from people who turn to psychics. With Web traffic from Lancaster's site generating business, it does not appear that Kreiman will easily give up the domain. Thus, Lancaster's wife, Susan, moved the old Web site to StopSylvia.com, allowing readers a chance to examine Browne's record. But it is worth pointing out the irony that a promoter of psychic claims is profiting from interest in skepticism. Perhaps Lancaster's work has such an impact that even the psychics have been forced to pay attention to the criticism. If so, it is remarkable testimony of what one skeptic can do with some spare time and knowledge of the Internet. Lancaster is still recovering, but the Web site will be updated when he gets better. In the meantime, readers can still download video and examine Browne's predictions at www.StopSylvia.com.

—Ryan Shaffer

Ryan Shaffer is in the department of history at the State University of New York at Stony Brook, where he is pursuing a PhD in British history. More information on Robert Lancaster can be found online at www.skepticsunite.com.

What's New? Observations on Science and Fringe Science from Bob Park

NO ENERGY: MANY IDEAS BUT SOME WON'T WORK

Orbo, a perpetual motion machine promised by the Steorn Company in Dublin, is one of them. Orbo was to be demonstrated a year ago at the Kinetica Museum in London (www.bobpark.org/WN07/wn070607.html). It didn't work. Steorn blamed the air-conditioning and said the demonstration would be delayed a few weeks. Well, fifty weeks later, Steorn says they fixed the problem. Not unless they've changed the first law of thermodynamics. Meanwhile, a jury of scientists convened by Steorn has issued a unanimous verdict: Steorn had "not shown the production of energy." [June 27]

PEOPLE: SEVEN BILLION IS ALREADY WAY TOO MANY

When was it that the media stopped mentioning "population"? We read almost daily headlines about global warming from CO_2 in the atmosphere. It's our own fault, we're told; we caused it by burning fossil fuels; we should have been driving fuel-efficient automobiles, living closer to work, and using nuclear and solar-power generation. That's all true, but it won't help if we just let the population grow. Name a single world problem that isn't made worse by population growth. Biologist Paul Ehrlich shook us awake in 1968 with *The Population Bomb*, but in 1980 he lost a public wager with University of Maryland economist and libertarian Julian Simon over the price of minerals. Today, although population has risen to double that of 1968, the media avoids even mentioning it. The June issue of *Scientific American*, however, has "Population and Sustainability" by Robert Engelman of Worldwatch. Everyone should read it. [June 19]

ALTERNATIVE MEDICINE: $2.5 BILLION LATER, STILL NO CURE

More than a third of all Americans use some form of alternative health remedies. Associated Press reporter Marilynn Marchione has written a series of articles on the failure of alternative remedies from herbals to acupuncture to demonstrate any measurable efficacy in placebo-controlled double-blind studies conducted for the National Institutes for Health (NIH). The possible exception is ginger capsules to treat nausea from chemotherapy. What's New strongly opposed the creation of the National Center for Complementary and Alternative Medicine at NIH when it was created in 2000, on the grounds that it would be seen as evidence that the medical world was taking alternative and complementary medicine seriously. It was. Nevertheless, when asked later to serve as the lone physicist on the steering committee, I agreed. The problem had simply become too large to ignore. The director Stephen E. Straus was both rigorous and fair, and although half the steering committee members were from the alternative world, there was a consensus on most issues. Tragically, Stephen Straus died of brain cancer in 2007. That desperate people still fall for these sham cures is also tragic. [June 19]

EVOLUTION: DARWIN'S GOLDEN RETRIEVER DOES IT AGAIN

Biologist Thomas Huxley was known as "Darwin's bulldog" for his spirited defense of Darwin's theory. Darwin's chief defender today is Eugenie Scott, director of the National Center for Science Education, who just won the inaugural Stephen Jay Gould Prize of the Society for the Study of Evolution. She was ranked by *Scientific American* as one of the top ten science leaders just a few weeks ago. [June 5]

THERMODYNAMICS: WHY CAN'T WE JUST BURN THE ASHES?

A friend at the BBC called my attention to an April 30 article in the business section of the *New York Times*. To reduce the emission of carbon dioxide from power plants, there are plans to sequester it deep underground. You have to pay to extract it and then pay again to get rid of it. However, a company called Carbon Sciences has an audacious plan: recycle the carbon by turning it into liquid hydrocarbon fuels. The author experiences a brief attack of self-doubt: "how much energy would it take to recombine carbon with hydrogen to produce a fuel that could then substitute for gasoline?" But his self-doubts seem to be swept away when the company assures him they have a secret biocatalyst that will combine the hydrogen in water with the carbon in carbon dioxide without the usual large expenditure of energy. That's the same claim that inventor Sam Leach made almost forty years ago when he scammed investors out of millions with an automobile that ran on water. [May 22]

QUESTION: WHAT IS IT WE'RE LOOKING FOR?

Humans, tiny specks of self-replicating matter, have succeeded in finding out just how insignificant we are. It's not enough. We also need to understand the atoms we are composed of and how they came to be assembled into life forms. The Large Hadron Collider may soon explain how the energy of the Big Bang became atoms. Nicholas Wade in the May 15 *New York Times* tells us that John Sutherland, a chemist at the University of Manchester, may have unraveled the chemistry of the origin of life. We will, at a time perhaps not far distant, be able to explain everything that exists, but we will still not know why. [May 15]

IT'S STILL COLD: BUT DO I STILL THINK IT'S SCIENCE?

A month before CBS aired the *60 Minutes* program on cold fusion [next item], I commented that "I think it's real science." I still do. That doesn't mean I think it's good science. Science is conditional; everything is open to further examination.

Some scientists think the community was too hasty in writing off the claims of cold fusion in 1989. They believe there may be important truths yet to be revealed. They have searched for those truths for twenty years and have every right to continue doing so. However, I think the likelihood of success is extremely low and, if asked, I would recommend against the use of public funds for that purpose. Their case is not helped by embracing any scientific-sounding nonsense that purports to show excess energy. [May 1]

COLD FUSION: PLEASE, MAY I HAVE A CUP OF TEA?

The April 19 edition of the CBS News program *60 Minutes* was titled "Race to Fusion." It was 1989; Fleischmann and Pons are shown with the "cold fusion" test tube that would have killed them had they been right. Because they lived, the race was called off. Michael McKubre of SRI apparently didn't get the memo; he just kept doing it over and over for twenty years. Lucky for him there's still no fusion, but he says he does get heat—except when he doesn't. How does it work? He hasn't a clue, but he showed a video cartoon of deuterium defusing through palladium and said it might be fusion. In fact McKubre called it "the most powerful source of energy known to man." Whew! But wait, Dick Garwin did a fusion experiment sixty years ago; it worked all too well. Garwin thinks McKubre is mistaken. Just about every physicist agrees, so the American Physical Society (APS) was asked to name an independent scientist to examine the claims of Energetics Technology, according to *60 Minutes* correspondent Scott Pelley. An APS statement issued Wednesday says this is totally false, and the APS does not endorse the cold fusion claims on *60 Minutes*. (Aside: This morning I thought I should watch the video on the *60 Minutes* Web site one more time. Drat! CBS took it off. No matter, there's a full transcript. Uh oh! The part where CBS says the APS picked Rob Duncan to look into the ET SuperWave is gone. CBS can change history? My God, time travel! Now that is powerful.) [April 24]

SUPERWAVE: IMPALED ON THE SHARP STAKE OF REPLICATION

Rob Duncan, vice chancellor of research at the University of Missouri, went to Israel with *60 Minutes* to visit Energetics Technologies (ET), which claims SuperWave Fusion will solve the energy problem. It shouldn't be necessary to remind scientists that neither visiting a laboratory nor peer reviewing a manuscript is enough. There must be independent replication of the ET claims. Without replication, the claims are nothing. The genius behind ET is the CVO, chief visionary officer, Irving Dardik, MD. Dardik got into cold fusion after losing his license to practice medicine in New York. It puts us in mind of Randy Mills of BlackLight Power, another MD who says he can solve the energy problem. Is SuperWave Fusion another scam? [April 24]

—Bob Park

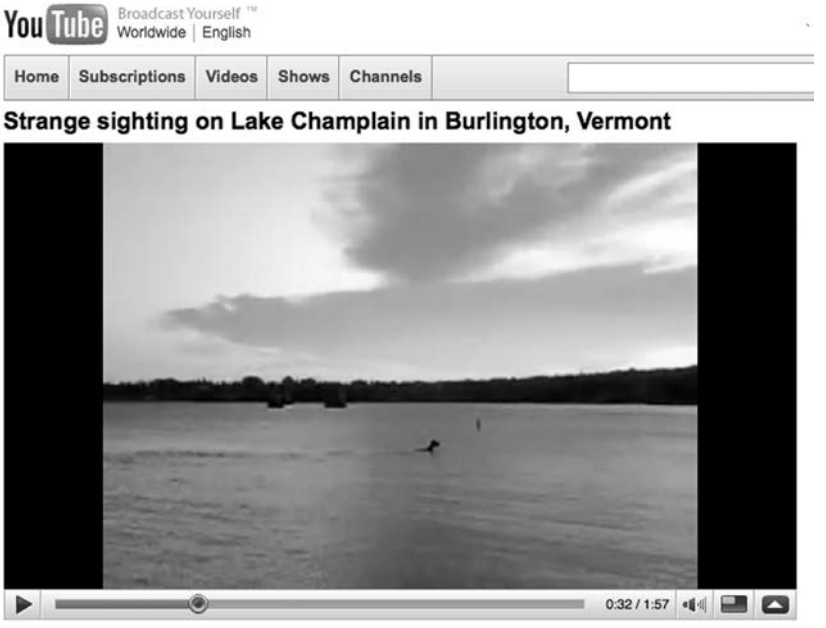
Robert L. Park is a professor of physics at the University of Maryland and a CSI fellow. His latest book is Superstition: Belief in the Age of Science *(Princeton University Press). These items are taken with permission from his weekly "What's New" electronic newsletter (archives available at www.bobpark.org).*

New Champ Lake Monster Video Surfaces

In May, new video footage of Champ, the monster said to inhabit Vermont's Lake Champlain, was released on YouTube (www.youtube.com/watch?v=YT49-LQMxthg). The two-minute cell-phone video shows the silhouette of some object—probably an animal—moving toward the eastern shore.

The video has created a buzz among monster enthusiasts, some proclaiming it's the best evidence for the creature since the famous 1977 Mansi photograph that Joe Nickell and I investigated for our SKEPTICAL INQUIRER articles on the subject (see the July/August 2003 issue).

I was asked by ABC News to examine the recent video, which holds several clues about the creature's identity. The



IGNITE THE ADVENTURE

The NEW FUTURE Fund

"Knowledge is an unending adventure at the edge of uncertainty."

– Jacob Bronowski, scientific polymath

For a more rational tomorrow … and the future of *Skeptical Inquirer* … please support the new phase of the Center for Inquiry New Future Fund

Across our world, forward-thinking men and women have recognized the scientific paradigm as their surest guide for sound thinking and living. For them knowledge is the greatest adventure. Today the Center for Inquiry movement strives to keep the adventure of knowledge accessible to all. To defend science, reason, freedom of inquiry, and human values in an ever-changing world, we must adopt new methods … new approaches. To realize tomorrow's ambitious goals, we must expand our organization.

The New Future Fund is an audacious, multiyear $26 million campaign to fund program needs, capital expansion, and endowment for the Committee for Skeptical Inquiry (CSI) and the Center for Inquiry.

In this new phase the focus turns to:

- **Outreach and education: publishing, media relations, personal outreach, and more**
- **Influencing public policy through our Center in the nation's capital**
- **Enhancing the Committee for the Scientific Examination of Religion (CSER)**
- **The Naturalism Research Project: library expansion, research fellowships, and other initiatives to spur exploration of the naturalist tradition**
- **Transnational development: reaching beyond borders through the United Nations and direct activism around the globe**

As always, the New Future Fund supports new and established programs, including *Skeptical Inquirer* and CSI's vital media and public education work. Because our work is so important, please make your most generous gift today to support program expansion. By pledging a larger gift over a three- or four-year period, you may find a significant contribution more affordable. Our development staff stands ready to answer questions you may have about asset transfers, planned giving arrangements, and the like. All gifts are fully tax-deductible to the extent allowed by law.

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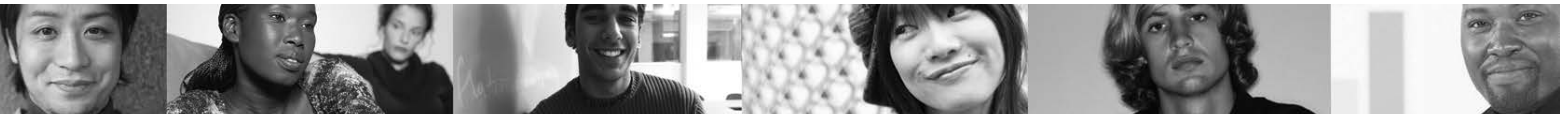
Toni Van Pelt, Paul Kurtz, and Ron Lindsay (standing); Lawrence Krauss, David Helfland, and Nobel Laureate Paul Boyer (seated) introduced the Declaration in Defense of Science and Secularism at the inaugural press conference of the Center for Inquiry/Office of Public Policy in Washington, D.C.

Local leaders, campus activists, and students from around the world came together at CFI's Summer Session.

Latin American and U.S. skeptical activists met at the CFI-sponsored First Iberoamerican Conference on Critical Thinking in Peru.

The new Naturalism Research Project will more than double our library facilities and create a collegial setting for scholarly dialogue and research.



form resembles the back and head of a swimming mammal (probably of the Cervidae family, which includes deer, elk, and moose) and moves toward the near shore past what appears to be a buoy, possibly suggesting shallow water. When analyzing videos such as this, what we don't see is often just as important as what we do see. In this case the video abruptly ends as the animal nears shore. The eyewitness was supposedly worried about running out of memory on his cell phone. That may be true, or perhaps he chose to edit out the last seconds of the sequence when we could all see what climbed ashore. Though I doubt a hoax, there are many unanswered questions about the sighting.

It's also interesting to note that this footage is unlike other alleged Champ videos and photographs. Many show a round, dark form in the water, but none so closely resemble a large swimming mammal. It also seems odd that an aquatic creature would make such an obvious effort to keep its head above water. If Champ monsters exist and must regularly surface to breathe (like dolphins or whales), it's amazing that they are not routinely sighted on the populated lake. It seems far more likely that this and other Champ sightings are the result of people mistaking natural phenomenon (including waves, logs, and animals) for monsters than that the lake is actually home to dozens of huge, unknown creatures who somehow leave no physical evidence of their existence.

The debate about the new Champ video will continue, with believers convinced it's a genuine puzzle and skeptics pointing out alternative explanations. As often happens with such videos, the quality is too poor to conclusively identify what was in the water. It seems certain that if the video evidence was of better quality, the mystery would vanish.

—Benjamin Radford

Benjamin Radford is co-author, with Joe Nickell, of Lake Monster Mysteries: Investigating the World's Most Elusive Creatures.

Third Annual IIG Awards: *Mythbusters* and Nickell Honored, Ben Stein Lampooned

On May 18, 2009, the Independent Investigations Group (IIG)—the premier paranormal investigations team on the West Coast—presented its third annual IIG Awards recognizing the promotion of science in popular media. The yearly event draws comedians, actors, producers, scientists, paranormal investigators, activists, and others to the Center for Inqury's Steve Allen Theater in Hollywood.

The event began with master of ceremonies Jim Underdown setting the stage for the IIG's traditional announcement of the non-winners—those productions that promote pseudoscience. Underdown brought Frank Conniff to the stage to present the Truly Terrible Television Award and the Massively Miserable Movie Award. Conniff is no stranger to exposing bad movies, thanks to his years on *Mystery Science Theater 3000*. The awards in these categories consisted of a framed certificate printed on "genuine imitation parchment." First up was *Psychic Kids: Children of the Paranormal*—a disturbing A&E television series in which youngsters who believe that they "see dead people" are encouraged to pursue their delusions. Clips from the show brought howls of ridicule from the skeptical audience.

Next up was *Expelled: No Intelligence Allowed*—Ben Stein's execrable creationist propaganda movie. The audience groaned when they viewed the very ending of the film wherein Stein made a cloying reference to his *Ferris Bueller's Day Off* character. After pleading for someone to stand up to the evils of Science, Stein asks, "Anyone? Anyone?"

The first half of a two-part "acceptance speech" consisted of a video clip with comments from two of the science experts interviewed in the film—science advocate Eugenie Scott and skeptic Michael Shermer. They both expressed their unequivocal disgust with Stein and his film. Shermer showed the press kit that was distributed at an industry screening of the film. The kit contained a full-sized poster of Stein in a schoolboy's uniform, a booklet, a whistle (for blowing the whistle on scientific bias), and finally a bumper sticker with the name of the movie, which Shermer quipped is "apparently to let people know that no intelligence is allowed inside the car."

Photo: Owen Hammer

Joe Nickell was inducted into the Houdini Hall of Honor at the third annual IIG Awards.

The audience was surprised to hear presenter Frank Conniff announce

that Ben Stein was at the theater to receive his award (it was actually comedian Ron Lynch doing a dead-on Ben Stein impression). In his "acceptance speech," Lynch (as Stein) made clumsy references to every project involving Ben Stein, and, after meekly declaring "Bueller," he fled the stage.

The first positive award trophy of the evening was presented by triple-threat actor/comedian/producer Dana Gould to the Discovery Channel's *Mythbusters* for its episode "NASA Moon Landing Hoax," in which myths about the 1969 Apollo 11 mission are examined. Conspiracy theories were elegantly busted when the team simulated the conditions of the moon in several ways, even going into the low-gravity "vomit comet" just to see if the otherworldly gait of Armstrong and company could have been faked by any other method. A pre-taped acceptance speech from head 'busters Adam Savage and Jamie Hyneman was played.

Photo: Owen Hammer

Paul Provenza, Joe Nickell, and Jim Underdown.

Gould went on to present a special honor to actress Amanda Peet for her work in promoting childhood vaccines. A video montage of her talk-show appearances was shown in which she promoted vaccines specifically and science in general. In a possible reference to Jenny McCarthy, she pleads with viewers to listen to scientists and doctors rather than celebrities. Her comment, "don't take my word for anything; I'm not a doctor," brought applause. Gould followed the award presentation with some improvised comedy, including a plea for skepticism regarding airport security, suggesting that instead of us taking off our shoes and placing them in the metal detector, we place metal detectors on the floor "where 100 percent of the known shoes are."

Next was comedienne Kathleen Madigan, who quipped that while most of those present reject fantasy, she can't even accept reality. She was on hand to present Comedy Central's *Lewis Black's Root of All Evil* with a trophy for an episode that dealt a merciless blow to the CFI/Los Angeles's neighbor—The Church of Scientology (CoS). Joining Kathleen on stage to present the award was comedian/actor Andy Kindler of *Everybody Loves Raymond* fame who is also a recurring guest on *The Late Show with David Letterman*. They jointly presented the award, accepted by creator and executive producer David Sacks. Sacks's gracious speech acknowledged that the CoS is a toothless tiger no longer capable of silencing their critics.

Photo: Owen Hammer

Producer David Sacks

Andy Kindler stuck around to present the next award. His improvised comments had the crowd in stitches. After his riffs on the hazards of owning an awards shop (what do you do during the off-season? Cold call?) he managed to present an award to *Religulous*—the funny and insightful documentary on the claims of religion starring Bill Maher. Kindler joked that Maher was unavailable to pick up the award in person because he was "spending a quiet evening at home with his ego."

For the second year in a row the IIG's highest honor—induction into the Houdini Hall of Honor—was presented by another triple-threat actor/-comedian/producer, Paul Provenza. The fourth inductee (following Harry Houdini, Carl Sagan, and James Randi) was a familiar name—paranormal investigator Joe Nickell. Nickell flew in from New York, leaving his Committee for Skeptical Inquiry job to be present for the induction. He was gracious but balked at the obvious implications of receiving an award intended to recognize "lifetime achievement."

The attendees, recipients, and presenters cavorted for hours in the lobby, plotting new skeptical schemes and hatching new creative projects. Meanwhile, IIG Awards producer David Richards slowly uncrossed his cramped fingers, happy in the thought that it would be nearly twelve months before having to think about next year's awards ceremony.

The evening was a hit, showing once again that the skeptical community and the entertainment industry can find common cause, if only for an evening of fun.

SI readers interested in obtaining a DVD copy of the event can order one at www.iigwest.org/iigawards and will eventually be able to buy advance tickets for the *fourth* annual IIG Awards at that same address.

—Owen Hammer

Owen Hammer is a filmmaker living in Hollywood who works with the IIG to investigate psychics, UFOs, state-sponsored pseudo-medicine (a real concern in California), and other scams that will not be exposed if grassroots skeptical groups don't do it.

Leadership Changes at the Center for Inquiry

Changes in the leadership of the Center for Inquiry, including the Committee for Skeptical Inquiry (which publishes SKEPTICAL INQUIRER), were announced at the end of a two-day meeting of the board of directors of the organizations June 1–2.

Here is the text of the news announcement:

Amherst, New York (June 2, 2009)—The Center for Inquiry and its affiliate organizations, the Council for Secular Humanism and the Committee for Skeptical Inquiry, announced today that in support of its two-year succession plan Dr. Paul Kurtz, the visionary leader and founder of all three organizations, will become chair emeritus. Kurtz in this capacity will continue as a voting member of the boards of directors for the balance of his terms ending in 2013. In his new role Kurtz will have time to concentrate on writing and numerous public speaking engagements on behalf of the Center for Inquiry as the founder and face of the organization.

Dr. Ronald A. Lindsay remains chief executive officer and president of the three corporations, with all rights and responsibilities associated with those positions. "Transition is challenging for an organization, but I believe because of the strength and resources of the Center for Inquiry and its affiliate organizations, including most importantly the quality and dedication of the staff, we will be able to carry out these changes successfully," Lindsay said. "Indeed, I believe that these changes will ultimately strengthen the organization."

Board member Richard K. Schroeder has been named chair of the three boards, and board member Jonathan Kurtz has been named to the new position of vice chair of the three boards. "I look forward to working with the new board chair, Richard Schroeder, and the new vice chair, Jonathan Kurtz," added Lindsay.

The Board reaffirmed the goals of the organizations, which are to foster a secular society based on science, reason, freedom of inquiry, and humanist values and to promote critical investigation of controversial and extraordinary claims through the use of responsible, scientific inquiry. From this point forward, the board will take a more direct role in overseeing their policies and overall direction. Three new committees will be formed within the board: a Policy Committee, a Nominations Committee, and a Compensation Committee.

The Center for Inquiry/Transnational, a nonprofit, educational, advocacy, and scientific-research think tank based in Amherst, New York, is also home to the Council for Secular Humanism, founded in 1980; and the Committee for Skeptical Inquiry (formerly CSICOP), founded in 1976. The Center for Inquiry's research and educational projects focus on three broad areas: religion, ethics, and society; paranormal and fringe-science claims; and sound public policy. The Center's Web site is www.centerforinquiry.net.

Paul Kurtz, chairman emeritus

"I look forward to helping our superb staff and dedicated supporters realize Paul Kurtz's vision for a rational, science-based, and humanistic world well into the twenty-first century."

— Richard Schroeder

In a subsequent action, Paul Kurtz was elected to serve on all three of the new board committees. Each has four members.

Ronald Lindsay was appointed CEO and president of CFI, CSI, and CSH in a June 2008 meeting of the boards. At the time he was CFI vice president

Ronald A. Lindsay, CEO and president

Richard Schroeder, chairman

and general counsel and a senior research fellow based in CFI's new Washington, D.C., office. Lindsay is both a philosopher and a lawyer. His doctorate, from Georgetown University, is in philosophy (with a concentration in bioethics). He has twenty-five years experience as a lawyer in private practice advising corporations, universities, and other institutions, particularly in employee relations. He has written extensively in scholarly and legal journals, and his book *Future Bioethics: Overcoming Taboos, Myths, and Dogmas* was published by Prometheus in September 2008.

Richard Schroeder, the new chairman of the organizations' boards, joined the boards in 2007 and is a longtime supporter of CFI's Amherst headquarters. A financial advisor and certified financial planner, he is executive vice president of Schroeder, Braxton and Vogt, Inc., financial advisors in Amherst, New York. He also worked for fourteen years as a business reporter for *The Buffalo News* and held other editorial positions over six years with the former Buffalo *Courier-Express* and the Binghamton, N.Y., *Sun-Bulletin.* Schroeder's academic training was in financial and economic history. He spoke on financial fraud at CSICOP's 2002 Fourth World Skeptics Conference in Burbank, California.

"We are lucky to have such a dynamic and committed group of people to lead CSI into the future, while at the same time having the wisdom and experience of Paul Kurtz at hand to call upon, as will most certainly be required, for years to come."

– Barry Karr

"I look forward to helping our superb staff and dedicated supporters realize Paul Kurtz's vision for a rational, science-based, and humanistic world well into the twenty-first century," Schroeder said.

Jonathan Kurtz, named to the new position of board vice chair, is president of Prometheus Books in Amherst, New York. Prometheus, an independent publisher founded by Paul Kurtz in 1969, publishes books for the educational, scientific, professional, library, popular, and consumer markets.

Barry Karr remains executive director of the Committee for Skeptical Inquiry and vice president and chief financial officer of CFI. He has been with the organizations since 1981. "I am looking forward to the next step in the evolution of CSI and the SKEPTICAL INQUIRER," Karr said. "We are lucky to have such a dynamic and committed group of people to lead CSI into the future, while at the same time having the wisdom and experience of Paul Kurtz at hand to call upon, as will most certainly be required, for years to come."

'None of This Is True':
Do Disclaimers about the Paranormal Really Work?

RICHARD WISEMAN, CHRIS FRENCH, and CAROLINE WATT

The last few years have seen substantial growth in the number of television programs claiming to contain paranormal phenomena. Viewers are now routinely offered the opportunity to accompany teams of "ghost-hunters" wandering through allegedly haunted buildings armed with little more than EMF meters, voice recorders, and high hopes of a second season. Alternatively, they can play the role of sick voyeur and watch mediums stand before groups of recently bereaved people and pretend to channel their deceased loved ones. ("I am hearing the voice of a woman. She's in her mid-thirties and couldn't care less about any of you. Oh, I'm sorry, that's the producer.")

It would be nice to think that viewers are canny enough to realize that such shows contain considerably more fiction than fact and that they might use their precognitive powers to hit the "off" button on their TV controllers before the programs begin. Unfortunately, research suggests that a significant percentage of the public really does believe that such programming depicts genuine paranormal events and thus comes away more convinced than ever about the existence of such phenomena. Perhaps because of this, various official bodies and pressure groups have urged those producing such shows to act responsibly. The Committee for Skeptical Inquiry's Council for Media Integrity has suggested that certain paranormal programming should carry "entertainment" or "fiction" labels. Likewise, the British media regulatory body Ofcom notes that any demonstrations of paranormal phenomena ". . . that purport to be real (as opposed to entertainment) must be treated with due objectivity" and that if a demonstration is for entertainment purposes, "this must be made clear to viewers."

Program creators and broadcasters usually attempt to comply with such guidelines by presenting onscreen "disclaimers," essentially informing viewers that such shows may not be exactly as they appear and thus should only be taken seriously by the hard of thinking. However, such messages are often shown for a very short period of time and tend to contain long and rather tortuously worded messages displayed in a relatively small font. Although such disclaimers may satisfy legal and regulatory guidelines, we wondered whether they had any real psychological impact on viewers. We hypothesized that if people genuinely believed that a program containing seemingly impossible phenomena was developed to entertain rather than inform, then they should be less likely to believe that the phenomena shown constitute evidence for the paranormal. But do the types of disclaimers typically used actually affect the way people view the evidential nature of the phenomena shown?

To help find out, we conducted an initial study. We recorded a ten-minute segment from a well-known television show in which an alleged medium gave readings to various audience members. The clip ended with an eighty-word disclaimer explaining that the show should be seen as entertainment, that people varied in their opinions about the nature of alleged mediumistic abilities, and that the program content should not be construed as fact. This long paragraph was broadcast in relatively small type and remained on the screen for about ten seconds.

We showed the clip to a group of undergraduate psychology students and asked them to rate the degree to which they thought the program provided evidence of "paranormal" powers, using a scale ranging from 1 (strongly disagree) to 7 (strongly agree). Next, we created a second clip by editing out the disclaimer altogether, showed this clip to another group of students, and had them make the same ratings. There was no statistically significant difference between the two groups' ratings, suggesting that the disclaimer had no effect on the way in which the students perceived the paranormal content of the program.[1]

We wondered whether the lack of any effect was due to the disclaimer being shown at the end of the program. After all, participants had probably made up their minds about the alleged paranormal phenomena by then, and the near-subliminal presentation of the long paragraph was unlikely to influence them one way or another. To test this idea, we edited the clip yet again, this time placing the disclaimer at the start of the show. This new edit was shown to another group of students, who again went on to rate the degree to which it provided evidence of paranormal powers. The results? Once again, there was no significant difference between their ratings and the ratings of

Richard Wiseman is in the department of psychology, University of Hertfordshire, U.K. Chris French is in the Anomalistic Psychology Research Unit, department of psychology, Goldsmith College, University of London. Caroline Watt is in the Koestler Parapsychology Unit, department of psychology, University of Edinburgh. Wiseman can be contacted via his website at www.richardwiseman.com.

those who didn't see the disclaimer.[2]

Undaunted, we toyed with the notion that perhaps the disclaimer was simply too vague and so produced our own shorter, more strongly worded, version:

> The alleged mediumistic abilities of the individuals featured in this program have not been subjected to controlled scientific investigations. In addition, some scientists have suggested that anecdotal evidence in support of such abilities could be due to several psychological techniques, such as use of general statements and feedback from people's verbal and nonverbal behaviour.

Once again, this was placed onscreen for ten seconds. We showed this version to two more groups of students, with one group seeing it before the show and another after. Did this have any effect? No. Once again, there was no statistical difference between the ratings of these groups and the ratings of those that saw no disclaimer at all.[3]

At present, we don't know why the type and position of the disclaimers tested have no significant effect on the way in which people view the evidential nature of the alleged paranormal phenomena in the program. It could be, for example, that our participants couldn't be bothered to read the disclaimer or that any influence it had was outweighed by the much more dramatic material in the rest of the clip. Either way, the results suggest that there is a pressing need to develop a form of wording and presentation that really gets the message across. Until then, the situation remains grim. Next time you see a paranormal program briefly presenting one of those long "for entertainment only" disclaimers you might be tempted to think, "Oh well, I guess it's better than nothing." Our research suggests that you are wrong. □

Notes

1. Original disclaimer at end (N=25), mean evidentiality rating = 2.71; no disclaimer (N=25) mean evidentiality rating = 2.59; t(51df) = .255, p = .80.

2. Original disclaimer at start (N=29), mean evidentiality rating = 2.59, t(54df) = .014, p = .99.

3. New disclaimer at start (N=31), mean evidentiality rating = 2.83, t(57) = .510, p = .61; new disclaimer at end (N=26), mean evidentiality rating = 3.2, t(52df) = 1.247, p = .22.

Can a Reasonable Skeptic Support Climate Change Legislation?

STUART JORDAN

CFI vets list of 687 'dissenting scientists' in Senate minority report; 80 percent haven't published peer-reviewed climate research.

Skeptics are rightly challenged to assess claims made by all parties when an issue of major public importance arises. This is especially true when any action taken may have unpredictable economic consequences for the entire country. Questions related to global warming, climate change, and national energy policy represent such an issue today.

Both proponents and opponents of action are now arming themselves for a major political fight. Proponents have collected a large body of scientific evidence predicting that maintaining the status quo will consign the world to climate disaster. Opponents are arguing that an economic collapse could result from expensive, dramatic action. Some opponents also argue that we need more research. In light of this, a continuing effort for objective assessment is needed.

This year, the current administration in Washington is preparing legislation that would, if fully implemented, mandate significant reductions in carbon dioxide emissions and also collect several hundred billion dollars in carbon taxes over a ten-year period. These taxes would be collected through a mechanism known as cap-and-trade by selling carbon credits—allowances to produce carbon dioxide—to industries that generate this known greenhouse gas. President Obama has endorsed this approach, which has been in place for several years in the European Union. Not surprisingly, there are opposing views on how well cap-and-trade has worked in Europe.

In response to this legislation, proponents and opponents have embarked on a major effort in Washington to pass, modify, or defeat it. Nearly every environmental organization, the majority of scientific organizations, and most Democrats support the legislation; most spokespersons for the energy industry, some scientists, and the more conservative Republicans tend either to oppose it or at least to seek major modifications.

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For example, *The Intergovernmental Panel on Climate Change (IPCC) Physical Science Report-2007* summarizes the work of approximately 2,000 scientists worldwide and supports major initiatives to curb carbon emissions. Representing the opposition according to Environment Maryland, a citizen-based environmental advocacy organization, are approximately 2,000 lobbyists who have been engaged by American energy industries to identify flaws in the IPCC-2007 arguments and in the administration's legislation.

Both sides have made significant efforts to establish scientific credibility with the public. Those favoring action rely heavily on the IPCC-2007 science report and note some alarming recent research that suggests the Greenland ice-cap may be melting at a faster rate than even IPCC-2007 reported. In contrast, a well-known opponent of human-induced global warming, Senator James Inhofe of Oklahoma, has sought to persuade people that the current scientific majority view is misguided. (Inhofe is the ranking Republican member of the Senate Committee on Environment and Public Works.) In consequence, his office has issued a Senate Minority report titled *United States Senate Minority Report on Global Warming.* It can be found at http://epw.senate.gov.

The minority report lists a number of individuals identified as scientists who allegedly dissent over man-made global-warming claims. As of January 2009, the number of such persons listed was 687. Noting that there were indeed some quite well-known scientists on the list, and in view of the importance of the issue, the Center for Inquiry/Office of Public Policy decided to vet the list carefully to establish how credible it is overall.

This research produced the following information on the 687 people listed in the Senate minority report. Categories included name, education, summary of publications in the refereed literature based on the better-known climate science and solar physics journals, current institutional affiliations, and professional identifications.

The proportion of them who have published articles on climate science proved to be slightly less than 10 percent. Rounding off, a total of 15 percent exhibited a significant publication record in subjects at least related to climate science. We found no evidence that 551 (~80 percent) had any peer-reviewed publications bearing on climate science. At least fifty-five had no science credentials at all, and many others identified as meteorologists proved to be weather reporters. Almost 4 percent expressed support for the general consensus supporting anthropogenic causes of global warming, the near-consensus expressed by the IPCC-2007 science report, and therefore should not have appeared on the list in the first place.

Noting that there were indeed some quite well-known scientists on the list, and in view of the importance of the issue, the Center for Inquiry/Office of Public Policy decided to vet the list carefully to establish how credible it is overall.

How should a skeptic deal with this information? All trained scientists admit that scientific truth is ultimately probabilistic, even when the probabilities appear to be approaching certainty. It is also true that the climate scientists I know grant that there are still a few "dark corners" in the realm of cloud theory that need to be explored in more detail using new data obtained on a smaller grid. Finally, it cannot be ruled out that some as-yet undiscovered natural process may be playing a larger than anticipated role in global warming. Opponents of human causation often propose the sun as the likely driver of contemporary global warming. While no one can say with certainty that the sun plays only a small role in climate change today, as a solar physicist I can say that the various solar mechanisms proposed to date have either been discredited by current research or have been presented in highly speculative arguments not now supported by observations.

Where does this leave us? As concerned citizens we need to recognize that we are dealing with a two-step decision process. The first step is getting the science right. There is no doubt that a large majority of the scientific research community thinks global-warming-driven climate change is due primarily to anthropogenic greenhouse gases. That there remains a much smaller number of research scientists who disagree and that no one can claim certainty about this complex problem is equally true. This makes it relatively easy for those who wish to delay or prevent action to claim to the public that there is a big controversy over the science, implying that action, and especially expensive action, would be unwise. However, the evidence suggests otherwise. *That there is a big and growing scientific controversy over anthropogenic sources of global warming is almost certainly untrue.*

The second step in the decision process is the political one, which necessarily brings in the economic issues. This brief piece cannot address those issues except to acknowledge their critical importance. Nevertheless, we can ask the skeptic who is not acquainted with the relevant science where he or she thinks the most credible scientific assessment lies—with the scientists whose published research is reported in the IPCC-2007 science report or with the much smaller group of scientists collected for the Senate minority report. □

Pirates' Ghosts: Aar-r-gh!

They embody legend: romantic, swashbuckling, heroic figures—enchanting rogues whose ghosts eternally guard their buried treasures, search for their lost heads, or simply beckon to the credulous from their supposed coastal haunts. I have sought their specters from New Orleans to Savannah, from North Carolina's Ocracoke Island to Oak Island in Nova Scotia's Mahone Bay. Here is a look at some of what I found; as usual, not everything was as it seemed.

Jean Lafitte

I began to think about pirates' ghosts on an investigative trip to Louisiana in 2000, when a nighttime tour of New Orleans "haunted" spots took me to two sites associated with an unlikely American hero, Jean Lafitte.

Lafitte (ca. 1780–ca. 1825) became known as "The Terror of the Gulf" for his exploits as a smuggler, privateer (one licensed by a government to seize its enemy's ships), and later pirate. Lafitte was transformed into a hero during the war of 1812. Suspected of complicity with British forces, he proved his loyalty to American General Andrew Jackson in 1815, spurning a British bribe of £30,000 and fighting heroically in defense of his adopted homeland during the Battle of New Orleans (Groom 2006).

Figure 1. Jean Lafitte's ramshackle blacksmith shop in New Orleans is allegedly home to his ghost. Watercolor sketch by Joe Nickell.

Dead since approximately 1825, Jean Lafitte still reportedly gets around, haunting, some say, a New Orleans bar, Lafitte's Blacksmith Shop, at 941 Bourbon Street. One ghost guide claims the structure was built "around 1722" (Belanger 2005, 91), but other sources place it at least half a century later—no earlier than 1772 (Dickinson 1997, 54). (See also Herczog 2000, 255; Cook 1999, 52; Bultman 1998, 95.) Of *briqueté entre poleaux* construction (i.e., bricked between posts), it was stuccoed over at a later period and now is in "alarmingly tumbledown" condition (Cook 1999, 52). (See figure 1.) Some sources (e.g., Nott 1928, 37, 39) are skeptical of tales that Lafitte actually ran a blacksmith shop as a cover for smuggling, but, says one, "it makes a good story" (Downs and Edge 2000, 197).

Certainly, as I can attest, the place is darkly atmospheric, and both the ambiance and imbibed spirits, together with the power of suggestion, no doubt contribute to reported sightings of the pirate. However, even one ghost promoter concedes, "Such sightings may not withstand a sobriety test, but this does little to dampen the pervasive appeal of Lafitte's Blacksmith Shop and Bar" (Sillery 2001, 110). In other instances—as when a bartender reported that "a short, stout man walked out of the fireplace" (Belanger 2005, 91)—the circumstances are suggestive. The bartender may well have been tired (it was "late one rainy night") and in a daydreaming state (he was "alone" with the soothing patter of rain), just the conditions known to prompt apparitional sightings in which images from the subconscious can momentarily be superimposed on the individual's surroundings (Nickell 2001, 290–293).

This is most likely to happen with imaginative individuals, especially those having fantasy-prone personalities.

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Psychics and mediums typically have characteristics associated with fantasizers (such as encountering apparitions, communicating with paranormal entities, and so on [Wilson and Barber 1983]). Consider a New Orleans ghost guide who calls herself "Bloody Mary"—a self-described "mystic," "psychic," and "medium" who believes she has had previous lives (qtd. in Belanger 2005, 88–90). She writes:

> The first time in this lifetime that I entered Lafitte's I was compelled to stare into the dual smithy (now turned fireplace). Staring at me from the center was a pair of eyes—free floating, with no face to be seen. My eyes and his were locked in a trance for some time until the eyes simply *poofed* into two bursts of flame and disappeared. That, of course, broke my trance, and when I bent down again to recheck the scene, nothing was to be seen. I checked for mirrors, candles, and such mundane things that might explain what I saw, but I found none. Shrugging my shoulders, I simply decided it was a sign of welcome. (qtd. in Belanger 2005, 91)

Elsewhere she has felt rooms "calling" to her, has sensed a "time portal," and has been lured to a room by "astral travel," saying, "I truly believe I had stayed there before." She has spirits who travel with her, sees a spectral resident in her hallways, and will "occasionally invite inside and outside spirits to parties" (qtd. in Belanger 2005, 88–91). Over the years I have observed a correlation between fantasy proneness and intensity of ghostly experiences (Nickell 2001, 299). "Bloody Mary" provides further evidence of the link.

"Ghost" photos taken by patrons at the Lafitte Blacksmith Shop and Bar have been described by Victor C. Klein (1999, 54) as exhibiting "strange luminous, somewhat amorphous, translucent cloudlike images." Although he does not reproduce the photos, the descriptions are consistent with the camera's flash rebounding from smoke or mist. Note Barbara Sillery's comment (2001, 110) that "the pirate has been frequently sighted in the *smoky haze* of the dimly lit rooms" (emphasis added) that are illuminated entirely by candles (Herczog 2000, 255). Not a single ghost has ever been authenticated by mainstream science, which attributes them to myriad non-supernatural causes (see Nickell 1994, 146–159; 2008).

Not far from Lafitte's Blacksmith Shop is a slate-paved pedestrian walkway known as Pirates Alley. It is supposedly haunted by the famous pirate, but—as one source acknowledges—"every historic site in New Orleans claims the ghost of Jean Lafitte" ("Pirates" 2009). The claim for Pirates Alley is that Lafitte met Andrew Jackson there in 1815 to plan the Battle of New Orleans; however, the alley was not actually constructed until the 1830s (Cook 1999, 25). (See figure 2.)

Figure 2. Pirate's Alley is another supposedly haunted site in New Orleans' French Quarter. Photo by Joe Nickell

Lafitte's ghost is also reputed to make appearances at La Porte, Texas (east of Houston). Legendarily, Lafitte buried a treasure there, consisting of gold and jewels and allegedly protected by his ghost. However, the treasure-guarding ghost is a common folklore motif (or story element) (Thompson 1955, 2: 429), and reports of some residents having been "awakened in the middle of the night by Lafitte's ghost, dressed in a red coat, standing at the foot of their beds" are easily explained as waking dreams. These occur in a state between wakefulness and sleep, and they are responsible for countless ghostly visitations (Nickell 1995, 41, 46, 55).

Captain Flint

Some sources associate Lafitte (if not his ghost) with another place, Pirates' House Restaurant in Savannah, Georgia, where I investigated and had a pleasant lunch on March 24, 2004. A more cautious source states only that "famous pirates such as Jean Lafitte came to port in Savannah," so it is "reasonable to suppose that many of them came to the Pirates [sic] House to enjoy a bit of grog, a sea chanty, and a coarse joke or two." This source ("Legend" 2009) adds:

> There are some who believe that the spirits of pirates still inhabit the Pirates House. Mysterious lights have been seen in the old seamen's quarters, and noises heard, apparitions that cannot be pegged to any human activity. There are those who have sensed presences and scenes of ancient violence. Yet others have passed years without noticing anything unusual in the building suggesting that the only piratical activity still in the house is the imbibing of generous quantities of ale by the witnesses to these events.

A popular ghost guide—*Haunted Places: The National Directory* (Hauck 1996, 141)—alleges that the restaurant was once Lafitte's home, adding, however, "it is the ghost of another notorious pirate known as Captain Flint, who haunts the place."

A "History" (2009) provided by the restaurant's Web site, states

> 'Tis said that old Captain Flint, who originally buried the fabulous treasure on Treasure Island, died here in an upstairs room. In the story, his faithful mate, Billy Bones, was at his side

> when he breathed his last, muttering 'Darby bring aft the rum.' Even now, many swear that the ghost of Captain Flint still haunts the Pirates' House on moonless nights.

It helps here to realize that "Captain Flint" was a fictitious character in Robert Louis Sevenson's tale of greedy pirates and revenge, *Treasure Island* (1883). Although it is claimed that "Captain Flint" was modeled on a historical character, that remains unproved, and there is only a supposed connection to Pirates' House ("Legend" 2009; "Captain Flint" 2009). This case is instructive in showing that an apparently fictional character can haunt a place just as convincingly as a real one!

The legendary pirate-guarded treasure has been the target of dowsers, psychics, dream interpreters, and other mystics—not one of them successful.

Captain Kidd

Treasure Island appears to be a source for other tales involving pirates' ghosts and the buried treasures they allegedly guard—none more famous than that of "Captain" William Kidd. A seventeenth-century privateer for the British against the French off the coast of North America, Kidd later became an outright pirate. British authorities declared him such, arrested him at Boston, and transported him to England. There he was tried, convicted, and hanged in 1701. His remains were displayed publicly, in a dangling iron cage, as a warning to others (Cawthorne 2005, 169–191; Klein 2006, 51–64).

"After his death," according to a scholarly source, "Kidd became a legendary figure in both England and the U.S. He became the hero of many ballads, his ghost was seen on several occasions, and numerous attempts were made to discover a fabulous treasure that he supposedly buried in various points ranging from Oak Island, Nova Scotia, to Gardiner's Island, New York" (*Benet's* 1987, 529). In addition to *Treasure Island*, the Kidd legend also strongly influenced Edgar Allan Poe's short story, "The Gold Bug" (1843). Treasure was recovered from Kidd, but even before his hanging rumors spread that there was much, much more. (Klein 2006, 58). (See also Shute 2002; Beck 1973, 337–338.)

Although proof or even credible evidence is lacking, Oak Island in Mahone Bay, Nova Scotia, is believed by many to contain a fabulous treasure—possibly Kidd's imagined trove. The island is steeped in legends about ghosts who guard the fabled "money pit." The focus of "the world's longest and most expensive treasure hunt" (O'Connor 1988, 4), this is a shaft, dug and re-dug for some two centuries, representing an inverted monument to greed, folly, and even death (Crooker 1993, 92–93; Nickell 2001, 219–234).

I visited Oak Island in mid 1999 after giving a presentation at a forensic conference in nearby New Brunswick. Although at the time the area was guarded by a no-trespassing sign rather than pirates' ghosts, I was able to access the island by a causeway and spend quality time with Dan Blankenship, dubbed "Oak Island's most obsessive searcher" (O'Connor 1988, 145). The next day I viewed the remainder of the island by boat, piloted by local private eye Jim Harvey. After considerable subsequent research (Nickell 2001, 219, 234), I concluded that the "money pit" and accompanying "pirate tunnels" were natural cavern features, that the treasure was fictitious, and that many of the cryptic elements in the Oak Island saga were attributable to "Secret Vault" rituals of the Freemasons. Indeed, the long "search" for Oak Island's legendary treasure was carried out largely by prominent Nova Scotia Masons.

Over the years, the legendary pirate-guarded treasure has also been the target of dowsers, psychics, dream interpreters, and other mystics—not one of them successful. If the site was indeed guarded by a ghost—of Kidd or an anonymous pirate—he seems not to have known he was wasting his effort on a nonexistent treasure trove.

Blackbeard

Of history's most notorious pirates, Edward Teach surely tops the list. Born possibly in Bristol, England, circa 1680, Teach, like others of his ilk, turned from privateering to piracy, his trademark jet beard earning him his sobriquet "Blackbeard." His "terrifying appearance, daring raids and murderous exploits" made him an enduring legend (Klein 2006, 76). He plundered the Atlantic coast, but when he planned to establish a fort at Ocracoke, an island off North Carolina's Outer Banks, the governor of neighboring Virginia responded. The governor persuaded the Virginia Assembly to post a £100 reward for Blackbeard, dead or alive, and lesser rewards for his men.

On November 22, 1718, two sloops under the command of Lt. Robert Maynard confronted Blackbeard's *Adventure* at Ocracoke. After unleashing a broadside against the *Jane*, Teach and his men boarded her, only to be overwhelmed by armed men hidden in the cargo hold. In the ensuing fight Maynard attacked Teach with pistol and sword, finally decapitating him. When its companion sloop pulled up, decks of the *Jane*

were awash in blood. Maynard suspended Teach's head as a trophy from his sloop's bowsprit (Klein 2006, 76–87; Cawthorne 2005, 199–207).

Today, Ocracoke is as lush with legends as it is with scenery. My wife and I visited Ocracoke on our honeymoon in 2006. The name itself has a Blackbeard legend attached: Supposedly, during the night before his encounter with Maynard, Blackbeard was impatient for dawn, crying out, "O crow cock! O crow cock!"—hence the name of the inlet and the island. Actually, long before Blackbeard, old maps show the area below Cape Hatteras with the name Wokokon. Sometimes spelled Woccocock, this apparently Native American name evolved (its *W* dropped) to Occocock (various spellings) and then to the present Ocracoke (Rondthaler, n.d.).

Other Blackbeard legends fare no better. One holds that after he was decapitated, his corpse was tossed overboard, where it swam "three times" around the sloop before finally sinking (Cawthorne 2005, 205). Of course, since this is scientifically impossible, it little matters that another source says it was "several times" (Klein 2006, 86). Still another best describes it with appropriate sarcasm as "seven times, or was it eleven times, or perhaps by this time it is seven times eleven" (Rondthaler n.d.). There are variations of the tale (to folklorists, *variants* are evidence of the folkloric process). One version states "that Teach's headless body ran wildly around the deck before throwing itself into the sea" (Pickering 2006, 74). Another variant combines two legends, having Blackbeard's severed head circling the ship and simultaneously crying out "O crow Cock! O crow, Cock!" supposedly because Blackbeard wanted morning light to help him find his body (Walser 1980, 12–14).

Sightings of Blackbeard's ghost commonly involve familiar folklore motifs. Endlessly, we are told, Blackbeard wanders Ocracoke searching for his lost head (Elizabeth and Roberts 2004, 13). So ubiquitous is this motif that I have encountered it in various countries (see, for example, "Headless Ghosts I Have Known" [Nickell 2006]). It is one that neither raconteurs nor the credulous can resist, though for others it is so hackneyed as to seem a caricature of the ghost-tale genre.

So is the legend of Blackbeard's ghost searching for his treasure—not at Ocracoke but at the Isles of Shoals in Maine and New Hampshire, as well as on Smith and Langier Islands in Chesapeake Bay (D'Agostino 2008, 110–111). But these have a suspiciously literary quality and seem of relatively late vintage, probably deriving from the Kidd legends.

Blackbeard is just one of four ghosts alleged to haunt Ocracoke—or only three if the "old man with a big, bushy beard" that appears in a museum's upstairs window (Elizabeth and Roberts 2004, 10) is the pirate himself. But that is not claimed, and the ghost of the historic David Williams House (now the Ocracoke Preservation Society Museum) not only has his head on his shoulders, but the house dates from 1900, long after Blackbeard's time. The ghost tale is even more recent. Julia Howard (2006), the Museum's director since 1972, told me she believes the story was fabricated by a docent (since deceased) whom she described as "a character." Howard also related how a volunteer once accommodated a mother whose boys had wanted to see the ghost. While they were outside looking up, the volunteer surreptitiously jiggled the curtains, creating a "ghost"—as real as any, pirate or not. □

References

Beck, Horace. 1973. *Folklore and the Seas*. Edison, N.J.: Castle Books.

Belanger, Jeff. 2005. *Encyclopedia of Haunted Places: Ghostly Locales from Around the World*. Franklin Lakes, N.J.: New Page Books.

Benet's Reader's Encyclopedia (3rd ed.). 1987. New York: Harper & and Row.

Bultman, Bethany Ewald. 1998. *New Orleans*. Oakland, Calif.: Compass American Guides.

Captain Flint. 2009. Wikipedia, available online at http://en.wikipedia.org/wiki/Captain_ Flint; accessed March 16, 2009.

Cawthorne, Nigel. 2005. *A History of Pirates: Blood and Thunder on the High Seas*. Edison, N.J.: Chartwell Books.

Cook, Samantha. 1999. *New Orleans: The Mini Rough Guide*. New York: Rough Guides.

Crooker, William S. 1993. *Oak Island Gold*. Halifax, Nova Scotia: Nimbus Publishing Ltd.

D'Agostino, Thomas. 2008. *Pirate Ghosts and Phantom Ships*. Atglen, Pa.: Schiffer Publishing.

Dickinson, Joy. 1997. *Haunted City: An Unauthorized Guide to the Magical, Magnificent New Orleans of Anne Rice*. Secaucus, N.J.: Citadel Press.

Downs, Tom, and John T. Edge. 2000. *New Orleans*, second ed. Hawthorn, Victoria, Australia: Lonely Planet.

Groom, Winston. 2006. *Patriot Fire*. New York: Knopf.

Hauck, Dennis William. 1996. *Haunted Places: The National Directory*. New York: Penguin.

Herczog, Mary. 2000. *Frommer's 2001 New Orleans*. Foster City, Calif.: IDG Books Worldwide.

History (Pirates' House). 2009. Available online at http://www.thepirateshouse.com/history.htm; accessed March 13, 2009.

Howard, Julia. 2006. Interview by Joe Nickell, April 11.

Klein, Shelley. 2006. *The Most Evil Pirates in History*. New York: Barnes and Noble.

Klein, Victor C. 1999. *New Orleans Ghosts II*. Metairie, La.: Lycanthrope Press.

The legend of the Pirates' House. 2009. Available online at http://bestreadguide.excursia.com/destinations/USA/GA/savannah/stories/20000712/att_pirates.shtml/; accessed March 13, 2009.

Nickell, Joe. 1994. *Camera Clues: A Handbook for Photographic Investigation*. Lexington, Ky.: University Press of Kentucky.

———. 1995. *Entities: Angels, Spirits, Demons, and Other Alien Beings*. Amherst, N.Y.: Prometheus Books.

———. 2001. *Real-Life X-Files: Investigating the Paranormal*. Lexington, Ky.: The University Press of Kentucky.

———. 2006. Headless ghosts I have known. *Skeptical Briefs* 16(4) (December): 2–4.

———. 2008. Photoghosts: Images of the spirit realm? SKEPTICAL INQUIRER 32(4) (July/August): 54–56.

Nott, G. William. 1928. *A Tour of the Vieux Carré*. New Orleans: Tropical Printing Co.

O'Connor, D'Arcy. 1988. *The Big Dig: The $10 Million Search for Oak Island's Legendary Treasure*. New York: Ballantine.

Pickering, David. 2006. *Pirates*. London: Collins.

Pirates Alley Café reviews. 2009. Available online at http://www.tripadvisor.com/Search?returnTo=__2F__&q=Pirates+Alley+Caf%C3%A9&subsearch.x=0&subsearch.y=0&subsearch=Go&geo=1; accessed March 13, 2009.

Rondthaler, Alice K. N.d. *The Story of Ocracoke* (pamphlet). Ocracoke, N.C.: Channel Press.

Shute, Nancy. 2002. Kidding about the captain. *U.S. News and World Report*, August 26–Sept. 2, 52.

Sillery, Barbara. 2001. *The Haunting of Louisiana*. Gretna, Louisiana: Pelican Publ. Co.

Thompson, Stith. 1955. *Motif-Index of Folk-Literature*, revised ed. Bloomington, Indiana: Indiana University Press, 1989.

Walser, Richard. 1980. *North Carolina Legends*. Raleigh, N.C.: North Carolina Dept. of Cultural Resources.

Bobby Fischer: Genius and Idiot

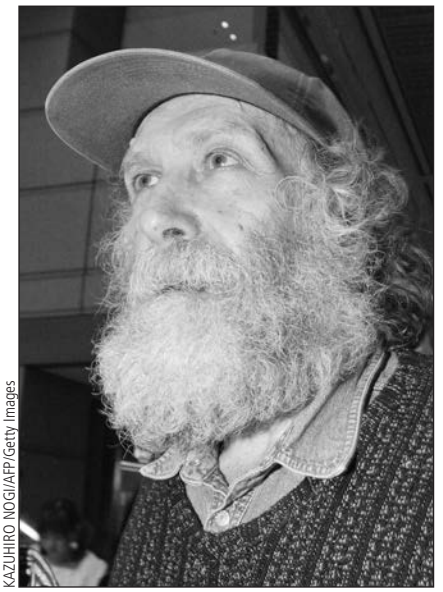
Is it possible for someone to be extremely intelligent and creative in a certain field and at the same time, in other respects, to be simple minded? The answer is yes.

Consider Isaac Newton. He was certainly a genius in the fields of mathematics and physics. On the other hand he devoted most of his life to studying the prophecies of the Bible, calculating the year in which God created the entire universe in six days, and determining the probable year that Jesus would return!

Consider Arthur Conan Doyle. He was a brilliant writer, creator of Sherlock Holmes and Dr. Watson, yet he firmly believed in the reality of fairies. He even wrote an entire book defending the authenticity of several crude photographs of the tiny winged fairies taken by two little girls.

My third example is Bobby Fischer, perhaps the greatest chess player of all time, certainly the best known. I have written elsewhere about Newton and Doyle. Here I will tell briefly the sad story of Fischer.

Robert James Fischer was born in Chicago in 1943 the illegitimate son of Jewish parents. His Polish mother, Regina, was an active Communist and a great admirer of the Soviet Union. She had a brief affair with Bobby's German father.



KAZUHIRO NOGI/AFP/Getty Images

Chess legend Bobby Fischer, the former U.S. champion turned fugitive from U.S. authorities

Bobby grew up in Brooklyn. At age six he became captivated by chess. At fourteen he was the U.S. chess champion. The following year he was declared a grandmaster. In 1972 he became world champion by defeating Boris Spassky at a tournament in Iceland. There is not the slightest doubt that Bobby was a genius, with a mind that could have made him a great mathematician had events in his childhood taken a different turn.

Aside from chess, Fischer came close to being a moron. I once thought his refusal to play chess on Saturday was because he was Jewish. No, it was because he had become a convert to the Worldwide Church of God, a strange sect founded by former Seventh-day Adventist Herbert W. Armstrong. Like the Adventists, Armstrong believed that Saturday is still the God-appointed Sabbath. In 1972 Bobby gave $61,000 to Armstrong, part of the prize money he had won by defeating Spassky.

The Worldwide Church of God was soon scandalized by the womanizing of Herbert's son Garner Ted. After being excommunicated by his father, Ted moved to Tyler, Texas, where he continued to preach his father's doctrines. Disenchanted by this rift in the Worldwide Church—and on one occasion physically assaulting a lady official of the church—Fischer left the fold to become an ardent admirer of Hitler and the Nazis!

Fischer's hatred of Jews turned paranoid. Pictures of Hitler decorated his lodgings. He denied the Holocaust. America, he was convinced, had fallen into the hands of "stinking Jews." When the September 11, 2001, attacks occurred, he called it "wonderful news." Wanted by the U.S. government for violating an order not to play a return

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match with Spassky in Yugoslavia, Fischer renounced his U.S. citizenship and settled in Iceland.

Fischer died of kidney failure in 2008. His Japanese wife, Myoko Wakai, flew to Iceland for the funeral. A devout Buddhist and the woman's chess champion of Japan, she and Fischer were legally married after living together for a short period. Presumably she will inherit Fischer's sizeable fortune.

John Carlin, in an article titled "The End Game of Bobby Fischer" in the *Observer/Guardian* (February 10, 2008), described Fischer, during his final years, as looking like a homeless bum. "His teeth were rotten, and his white hair and beard were long and unkempt." Bobby had a low opinion of doctors and dentists. He had all the metal fillings in his teeth removed because he thought radiation from them was injuring his health, or perhaps American or Russian enemies were causing the harmful radiation from his molars. Fischer seldom changed his clothes or removed his baseball cap. After his death in 2008 at age sixty-four, he was buried late one night near a tiny church in Iceland. A brief, shabby funeral was attended by a Catholic priest he had never known.

Fischer had an older sister, Joan, who died a few years earlier. She was the wife of Russell Targ, the physicist and parapsychologist whose chief claim to fame is having validated the psychic powers of Uri Geller. □

Photo via Newscom

In 1972, in Helsinki, Bobby Fischer broke twenty-four years of Soviet dominance by defeating Boris Spassky.

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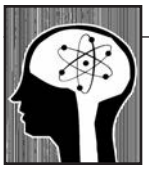

Logophobia

I wish to introduce readers of the SKEPTICAL INQUIRER to a wonderfully useful term to skeptics, *logophobia*. Its Greek roots are obvious: *logos* means *thought*, particularly rational thought, and *phobos* means *fear of*. Logophobia is defined as "a skeptical doctrine about rationality . . . [where] rationality cannot be an objective constraint on us but is just whatever we make it, and what we make it depends on what we value." Moreover, the definition continues, "Opponents are held to disguise their self-interested construction of rationality behind a metaphysically inflated view of rationality in which Reason with a capital R is supposed to transcend the merely empirical selves of rational beings." Do you know of any logophobics among your acquaintances?

The term was introduced—obviously in jest—by philosopher Nicholas Shackel in a delightful paper titled "The Vacuity of Postmodernist Methodology" (published in *Metaphilosophy*, vol. 36, issue 3, April 2005, pp. 295–320). Shackel's paper is actually a serious, and at times rather technical, critique of the *modus operandi* of postmodernist (and deconstructionist and anti-rationalist feminist) authors such as Michel Foucault, Jacques Derrida, Jean-Francois Lyotard, David Bloor, Richard Rorty, and Stanley Fish, to mention a few of the major offenders. But the list might as well include names perhaps more relevant to readers of this publication, for instance creationist/-IDers Kent Hovind, Ken Ham, Duane Gish, Bill Dembski, and Michael Behe, "gurus" like Deepak Chopra, paranormalists like Uri Geller, psychics like Sylvia Browne, or vaccination-deniers such as Jenny McCarthy (and her new unconscionable sponsor, OprahWinfrey).

Logophobics have developed an arsenal of strategies to obfuscate clear thinking, which they deploy whenever pressed by a skeptic.

According to Shackel, logophobics have developed an arsenal of strategies to obfuscate clear thinking, which they deploy whenever pressed by a skeptic. For instance, consider Foucault's classic thesis that there is no such thing as scientific truth because truth is a reflection

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of local socioeconomic and political power: "The essential political problem for the intellectual is not to criticise the ideological contents supposedly linked to science, or to ensure that his own scientific practice is accompanied by a correct ideology, but that of ascertaining the possibility of constituting a new politics of truth" (quoted in Shackel, p. 299). This is apparently strong stuff, but it becomes a much milder statement when Foucault later tells us what he means by *truth*: "'Truth' is to be understood as a system of ordered procedures for the production, regulation, distribution, circulation and operation of statements." Really? And here I was thinking all along that *truth* means an accurate description of an observer-independent reality. Silly me.

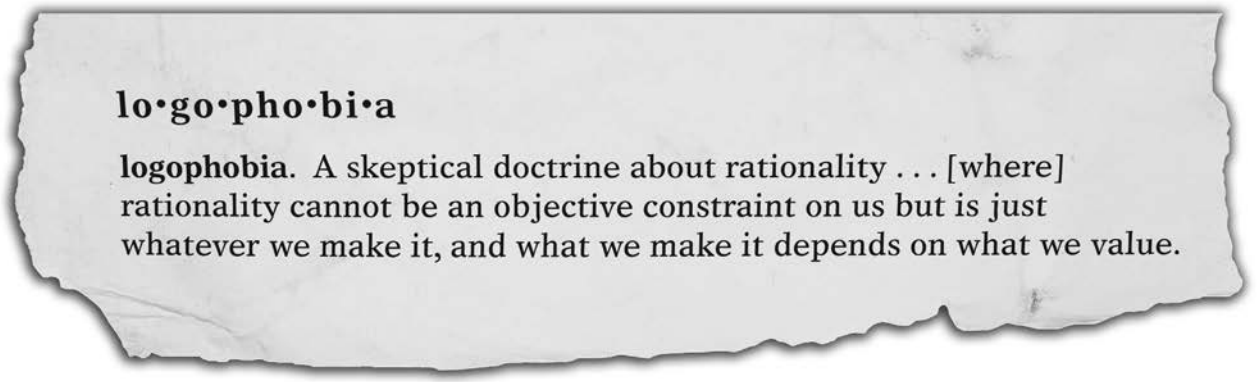
Shackel calls this sort of move a "troll truism," "a mildly ambiguous statement by which an exciting falsehood may trade on a trivial truth." It is a particular form of Humpty-Dumptying, a term derived from the character in Lewis Carroll's *Through the Looking Glass* who—after Alice points out that he is arbitrarily switching word meanings in the middle of their discussion—famously tells her: "When I use a word, it means just what I choose it to mean—neither more nor less."

Examples of Humpty-Dumptying litter the pseudoscientific landscape, for instance in discussions of the ever more vacuous concept of "irreducible complexity," a supposed intellectual cornerstone of the modern intelligent design movement, alleged proof that evolution cannot occur by natural processes. Michael Behe's original definition went something like this: "A single system composed of several well-matched, interacting parts that contribute to the basic function of the system, wherein the removal of any one of the parts causes the system to effectively cease functioning" (*Darwin's Black Box*, p. 39). The problem with this, as philosopher Niall Shanks and biologist Karl Joplin immediately pointed out, is that a currently "irreducible" structure can easily result from a natural and gradual historical process, the alleged irreducibility appearing later on as a byproduct of said historical process.

Not to worry, Behe simply changed his definition to overcome the problem: "An irreducibly complex evolutionary pathway is one that contains one or more unselected steps (that is, one or more necessary-but-unselected mutations)" ("A Response to Critics of *Darwin's Black Box*" by Michael Behe, *Progress in Complexity, Information and Design*, Volume 1.1, January–March, 2002). Notice that Behe switched from defining a property applicable to currently existing biological systems to the property of a *historical pathway*, i.e., of a chain of events that has already occurred. This moves the target into rather unassailable territory because it turns irreducible complexity into an argument from ignorance (Behe's in particular).

Logophobia, I maintain, is a broad condition that can strike adult human beings of all ages, genders, and cultural backgrounds, especially when they have never been seriously exposed to the basics of critical thinking or when they have grown up in the thrall of a powerful ideological system. The disease is preventable by early education, though this requires painful effort on the part of teachers and students alike. Once the subject is past middle school it becomes increasingly difficult, and in most cases essentially impossible, to provide a cure, and huge amounts of financial resources and time are wasted as a result. Occasionally, lives are lost as a direct outcome of logophobia, especially when the logophobic is a politician with the power to start a war or a celebrity pushing an anti-medical health agenda.

Needless to say, fighting the spread of logophobia is a primary responsibility of every critically thinking person despite the unfavorable odds, which is why thorough knowledge of the disease and of its symptoms is so crucial. Spread the word! □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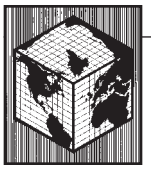

Eusapia Palladino, Queen of the Cabinet, Part 3

Psychic medium Eusapia Palladino's main secret—the ultimate weapon through which she was able to accomplish most of her incredible stunts during séances—was her left foot. The substitution of the foot was much easier to accomplish than that of her hand because it happened under the table, where the light was extremely dim; furthermore, her large skirt provided cover. The structure of the table also helped in many ways. Sitting at the narrow end not only allowed Eusapia to move it about by only slightly opening her legs, but it also forced the two experimenters sitting on the sides of the table to have the toes of their feet very close to one another. This ideal position allowed Eusapia to keep contact with both the experimenters' feet with just one foot placed sideways.

The main advantage, however, rests in the fact that the three experimenters did not suspect that she could use her foot to produce the majority of the phenomena they were experiencing. In fact, they perhaps thought that she could use the foot to raise the table, but it never crossed their minds that she could also move objects in the cabinet behind her or produce the bulges on the curtain behind her at the height of her head or touch the experimenters on their faces. Eusapia was, by the time of the Feilding sèances, fifty-four and quite heavy; she didn't look at all like a contortionist. Thus, it never dawned on the experimenters (as is clear from their report) that Eusapia could articulate her hip enough to allow for such movements while her torso remained still. For example, when they saw a bulge in the curtain (formed from the inside of the cabinet) they first assumed a thread must have been used to pull the curtain but discarded this hypothesis since the bulge was rounded and not pointed like it would be if there was a thread attached to the curtain. Sometimes, Eusapia allowed the experimenters to touch or feel the bulges through the curtain; they felt fingers (complete with fingernails on them) and concluded without a doubt that a hand caused the bulge. They then immediately checked for the medium's hands and, finding them both on the table, surrendered to the evidence of an inexplicable phenomenon.

Sometimes Eusapia let her feet come slightly out of the curtain (in very dim light, obviously), which made the experimenters think they were watching a monster, which they described as a small head with a long neck. Never did they think to check where her feet were.

There suddenly came a wild, yelling scream. It was such a scream as I have never heard before in my life, not even in Sarah Bernhardt's most thrilling scenes. It was a scream as if a dagger had stabbed Eusapia right through the heart.

Eusapia's secret weapon was her articulated hip. It is understandable that given her age and size this supposition might seem ridiculous, but the proof that Eusapia was still very active and agile came the year following the Naples séances during her disastrous American tour. Here, three experimenters much more cunning than Feilding, Baggally, and Carrington conducted the experiments.

The American Investigations

After the exalted success of the Naples

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séances, one of the experimenters, Hereward Carrington, went back to America. He became an impresario and in 1909 and 1910 organized a tour for Eusapia for a very handsome fee (some $125 for a single séance—not bad in those days). What happened during that tour is well known, but it is worthwhile to report in full a couple of episodes as described by American witnesses. In the report of the Neapolitan séances the phenomena repeatedly described are exactly the same as the ones Eusapia produced in the American séances, when the "sapience" of her left foot was discovered—the only difference was that not one of the experimenters in Naples ever suspected that the phenomena might be produced by her foot.

The first description of Eusapia's method was given by Hugo Münsterberg, the famous Dutch psychologist and philosopher who worked at Harvard University. It refers to a séance held on the night of December 18, 1909 (quoted in: Hansel, pp. 240–241):

> One week before Christmas, at the midnight hour, I sat again at Madame Palladino's favorite left side and a well-known scientist [was] on her right. We had her under strictest supervision. Her left hand grasped my hand, her right hand was held by her right neighbor, her left foot rested on my foot while her right was pressing the foot of her other neighbor. For an hour the regulation performance had gone on. But now we sat in the darkened room in the highest expectancy while Mr. Carrington begged John [King, Eusapia's spirit control] to touch my arm and then to lift the table in the cabinet behind her and John really came. He touched me distinctly on my hip and then on my arm and at last he pulled my sleeve at the elbow. I plainly felt the thumb and the fingers. It was most uncanny. And, finally, John was to lift the table in the cabinet. We held both her hands, we felt both her feet, and yet the table three feet behind her began to scratch the floor and we expected it to be lifted. But instead, there suddenly came a wild, yelling scream. It was such a scream as I have never heard before in my life, not even in Sarah Bernhardt's most thrilling scenes. It was a scream as if a dagger had stabbed Eusapia right through the heart.
>
> What had happened? Neither she nor Carrington had the slightest idea that a man was lying flat on the floor and had succeeded in slipping noiselessly below the curtain into the cabinet. I had told him that I expected wires stretched out from her body and he looked out for them. What a surprise when he saw that she had simply freed her foot from her shoe and with an athletic backward movement of the leg was reaching out and fishing with her toes for the guitar and the table in the cabinet! And then lying on the floor he grasped her foot and caught her heel with firm hand, and she responded with the wild scream which indicated that she knew that at last she was trapped and her glory had shattered.
>
> Her achievement was splendid. She had lifted her unshod foot to the height of my arm when she touched me under cover of the curtain, without changing in the least the position of her body. When her foot played thumb and fingers the game was also neat throughout. To be sure, I remember before she was to reach out for the table behind her, she suddenly felt need of touching my left hand too, and for that purpose she leaned heavily over the table at which we were sitting. She said that she must do it because her spiritual fluid had become too strong and the touch would relieve her. As a matter of course in leaning forward with the upper half of her body she became able to push her foot further backward and thus to reach the light table, which probably stood a few inches too far. And then came the scream and the doom.

Notwithstanding the damning exposure, Carrington kept Eusapia in America giving séances for months. During one of these, however, unknown to her, three professional magicians, W.S. Davis, J.L. Kellogg, and J.W. Sargent, together with J.L. Rinn, an amateur magician and friend of Houdini, participated and detected the exact methodology used by Eusapia to produce the phenomena. A report on this exposure was published in *Science* (Miller 1910). Rinn and a Columbia student, Warner C. Payne, had been hiding under the chairs of the experimenters during a séance held on April 24 at Columbia University. From this position they had been able to witness the substitution of foot: they saw the medium free her left leg by maneuvering her right foot so that her heel rested on Davis's toe and her toe on Kellogg's toe. What happened then is the usual repertoire of phenomena, identical to those observed in Naples (quoted in: Hansel, p. 242):

> In a few moments, after some ejaculations in Italian from the medium, the table began to wobble from side to side; and a foot came from underneath the dress of the medium and placed the toe underneath the leg of the table on the left side of the medium, and, pressing upward, gave it a little chuck into the air. . . . A short time after the lights were lowered she swung her left foot free from her dress at the back and kicked the curtain of the cabinet quickly, which caused it to bulge out toward the sitters. This was done several times so daringly that under the chairs where I lay it seemed almost impossible that the people above the table could not have observed it.
>
> Later the medium placed her left leg back into the cabinet and pulled out from behind the curtain a small table with certain articles upon it, which was dashed to the floor in front of the cabinet on the left-hand side. It remained there in varying positions and was kicked by the medium a number of times. At one time the medium juggled the table that had been kicked out from behind the curtain on the end of her left toe in a very clever manner, so that it gave the appearance as if the table was floating in the air.

It was the end of Eusapia's American tour and also of her career. Carrington did admit that sometimes the medium cheated, but he insisted that on other occasions she was completely genuine; he maintained this claim until his death in 1958.

In the next installment, we will examine some of the psychological aspects behind the Palladino phenomena and why experimenters were so willing to excuse her cheating. □

References

Hansel, C.E.M. 1989. *The Search for Psychic Powers.* Buffalo: Prometheus Books.

Miller, D.S. 1910. Report on an investigation of the phenomena connected with Eusapia Palladino. *Science* 77.

Münsterberg, H. 1910. Report on a sitting with Eusapia Palladino. *Metropolitan Magazine*, February; quoted in: Hansel, C.E.M. (1989) *The Search for Psychic Powers*, pp. 240–41.

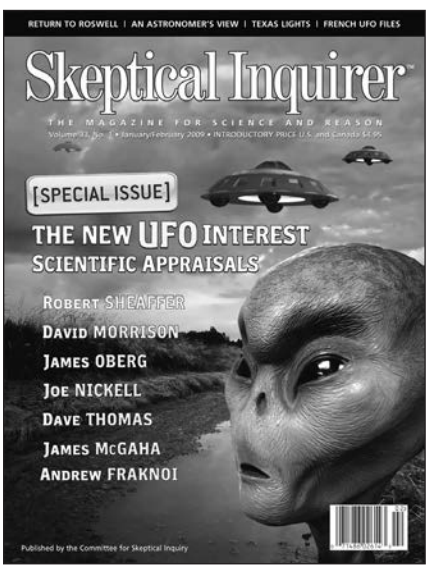
Rinn, J.F. 1950. *Sixty Years of Psychical Research.* New York: Truth Seeker Company.

The Pseudoscience of Anti-Anti-UFOlogy

Many readers are surely familiar with author and pro-UFO lecturer Stanton T. Friedman, who calls himself the "Flying Saucer physicist" because he actually did work in physics about fifty years ago (although not since). Well, Stanton is upset by the skeptical writings contained in SI's special issue on UFOs (January-/February 2009) and elsewhere. He has written two papers thus far denouncing us, and it is the subject of his Keynote Address at the MUFON Conference in August.

In February, Friedman wrote an article, "Debunkers at it Again," reviewing our UFO special issue (www.theufochronicles.com/2009/02/debunkers-at-it-again.html). "In actuality, the active writers and 'investigators' aren't skeptics. They are Debunkers doing their best to pull the wool over the eyes of a curious public. They know the answers, so don't really need to investigate. Proclamation is more their style. Deception is the name of the game."

Friedman goes on to name names: He critiques Joe Nickell's article "Return to Roswell" by noting that Nickell is a former magician, and "of course the stock in trade of magicians is intentional deception with another sterling example being the Amazing Randi." So by Friedman-logic, anyone who has ever practiced prestidigitation can never be trusted in anything. He criticizes Nickell for raising "the baseless Project Mogul explanation" for Roswell, which cannot be correct, says Friedman, because it does not match the claims made in later years by alleged Roswell witnesses (although it does match quite well the account of Mac Brazel, the original witness, given in 1947).



He moves on to my critique of the Betty and Barney Hill case, where I note the resemblance of their "hypnosis UFO testimony" to Betty Hill's post-incident dreams. I wrote, "Barney had heard her repeat [them] many times," which he claims is "nonsense." According to Friedman, "Barney read Betty's dreams once, and the notes were put in a drawer," and that settles that. He conveniently forgets the passages in John G. Fuller's *The Interrupted Journey*, the first book about the incident, describing the long sessions Betty and Barney spent with several UFOlogists, "beginning at noon and running almost until midnight," in which all aspects of the incident were discussed again and again. He also forgets that Barney told Dr. Simon, the psychiatrist who interviewed and

Robert Sheaffer's "Psychic Vibrations" column has appeared in the SKEPTICAL INQUIRER *for the past thirty years, and he is author of* UFO Sightings: The Evidence *(Prometheus 1998). His Web site is at www.debunker.com.*

treated them both, that his wife had told him "a great many details of the dreams" and that Dr. Simon had concluded that the dreams of Mrs. Hill "had assumed the quality of a fantasized experience."

Friedman next attacks David Morrison, NASA senior scientist, for the "absurd" suggestion that if intelligently controlled UFOs were here, we might pick up radio transmissions from them or from their home planets. "Maybe secret NSA listening devices pick up alien signals, but then the NSA doesn't release info about what signals it receives," said Friedman. He also attacks Dave Thomas, a scientist in New Mexico and president of New Mexicans for Science and Reason, saying, "Dave has certainly demonstrated his lack of knowledge of both the Roswell and Aztec UFO crash retrieval cases." Thomas has conducted in-depth interviews with Charles Moore, the chief scientist of Project Mogul, whose balloon caused the Roswell crash scare in 1947. The "Aztec crash" case that Friedman seems so keen on is taken from a 1950 book by Hollywood writer Frank Scully, *Behind the Flying Saucers*, which was exposed as a hoax more than fifty years ago by newspaperman J.P. Cahn. Friedman concludes with, "the SKEPTICAL INQUIRER provides many examples of the intellectual bankruptcy of the pseudo-science of anti-Ufology."

Friedman was still hot under the collar in May, when he followed this up with a second article titled the "Pseudo-Science of Anti-Ufology" (www.theufochronicles.com/2009/05/pseudo-science-of-anti-ufology.html). He says that skeptics' arguments "aren't scientific, but rather represent research by proclamation rather than investigation." Given that SI's special issue on UFOs contained detailed investigative reports on the 1984 Minsk, USSR UFO sightings, the Big Sur UFO of 1964, an update on Roswell developments, and the Stevenville, Texas sightings of 2008, if this is mere "proclamation," then I can't imagine what "investigation" would look like. "Proclamations and attacks, often given the appearance of being scientific, have been launched at every aspect of the phenomena. Despite an enormous array of real evidence and data, we have been treated to false claims, false reasoning, bias and ignorance." Of course, if Friedman or anyone else could produce even one piece of "real evidence and data," the UFO debate would have been over long ago.

Friedman has long been obsessed with the little-known and even less-read Project Bluebook Special Report Number 14, a statistical analysis of UFO reports released by the Battelle Memorial Institute way back in 1955. However, he carefully picks and chooses the quotes that he uses from that report, implying it is some hidden pro-UFO gem deliberately ignored by skeptics. However, Friedman never reveals this quote from the Summary of BBSR14: "It is considered to be highly improbable that reports of unidentified aerial objects examined in this study represent observations of technological developments outside of the range of present-day scientific knowledge" (page viii), which means that the report says exactly the opposite of what Friedman wants us to think it does. "Why isn't BBSR 14 cited in the debunking books?" he pointedly asks. Probably because it is over fifty years old and contains little that is interesting or relevant today, although Alan Hendry (not a "debunker" but a very skeptical UFOlogist) did spend several pages of his *UFO Handbook* (Doubleday, 1979) critiquing its approach. Hendry concluded, "If the Battelle group had had a real appreciation for how loose the data were, they never would have bothered with a statistical comparison to begin with" (p. 266).

Freidman concludes, "If one makes an appropriately objective and careful examination of the pro and anti-UFO arguments, one finds that the evidence is overwhelming that Earth is being visited by intelligently controlled vehicles of extraterrestrial origin and that only pseudo-scientific arguments of a vocal but small group of debunkers stand in the way of reaching that conclusion." It's truly remarkable what we, a small group of skeptics writing for SI and similar publications, have supposedly been able to accomplish. Even though the number of people we reach in our publications is far fewer than Friedman reaches on any one of his many appearances on TV and radio programs such as *Larry King Live*, *Coast to Coast AM*, etc., he claims that the only reason that extraterrestrial visitation has not been accepted by mainstream science and the media is because we noisy negativists keep chattering against them. The reality is, of course, that if his supposed "UFO evidence" were nearly as good as he claims it is, then nothing would be able to stand in its way.

Stanton Friedman critiques Joe Nickell's article "Return to Roswell" by noting that Nickell is a former magician....So by Friedman-logic, anyone who has ever practiced prestidigitation can never be trusted in anything.

Since Friedman loudly claims to represent "scientific UFOlogy," then like all scientists he must revise or even discard his hypotheses when new data comes in and invalidates them. One such instance has clearly occurred of late: the complete invalidation of the Fish Map, supposedly an extraterrestrial navigation map that Betty Hill saw during her celebrated "UFO abduction" in 1961. For at least thirty-five years, Friedman has been claiming that researcher Marjorie Fish's supposed identification of the dots Betty Hill drew as being potentially habitable nearby stars proves the extraterrestrial

nature of the Betty and Barney Hill "UFO abduction." He has made the Fish Map one of the central points of his lectures and writings. The similarity between the Hill drawing and the Fish Map was actually never very good, but folks who were so inclined could point to a number of points of correspondence between the two. (For a detailed discussion, see my paper "There Were No Extraterrestrials" in *Encounters at Indian Head*).

But today the Fish Map is no longer viable. In her research beginning in 1966, Fish made the wise choice to use the Gliese Catalogue of Nearby Stars, which was then the most accurate available. But that was over forty years ago, and science never stands still. Astronomical researcher Brett Holman recently checked out what the Fish Map would look like if it were built using the most accurate astronomical data available today. His answer is in his article in the British publication *Fortean Times* (242, November 2008): "Goodbye, Zeta Reticuli" (the supposed home solar system of the UFOnauts). Holman writes, "In the early 1990s the Hipparcos satellite measured the positions of nearly 120,000 stars ten times more accurately than ever before—including all of those that appear in the Fish interpretation. The results of this work, and much else besides, is [*sic*] available online now, and can be easily queried using Web sites such as SIMBAD at the Strasbourg Astronomical Observatory."

Fish excluded all variable stars and close binaries to include only supposedly habitable solar systems—but the new data reveals two of her stars as suspected variables and two more as close binaries. So there go four of her fifteen stars. And two more are much farther away than earlier believed, removing them completely from the volume of space in question. Six stars of that supposedly exact-matching pattern are definitely gone, excluded by the very criteria that once included them using the forty-year-old data. Goodbye, Zeta Reticuli.

Since scientists are obligated to repudiate their hypotheses should subsequent data contradict them, Friedman will have to admit that he was wrong about the Fish map if he is practicing "scientific UFOlogy" as he claims. But that will never happen. Arguing with Friedman is like arguing with a creationist who keeps using discredited arguments to impress new audiences and seizing upon minor misstatements of his critics and attributing to them the very worst of motives while completely ignoring their strongest arguments. His arguments rely heavily on the *ad hominem* attack—his critics are such terrible persons—a sure sign of somebody trying to defend emotionally a position that can't be defended logically. (Whenever you see the strong reliance on the *ad hominem*, it's almost like a red banner proclaiming "my arguments don't hold up.")

From this moment on, every time that Friedman speaks of the Fish Map, unless it is to say "I was wrong about it," his own words will brand him a hypocrite.

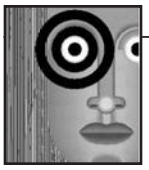
* * *

Meanwhile, the English-speaking world clearly has no monopoly on important UFO research. The Macedonian International News Agency reported on May 26 that a Russian scientist has theorized that a UFO deliberately collided with the Tunguska Meteorite to save Earth (see http://macedoniaonline.eu/content/view/6868/56/). So says Yuri Labvin, head of the Tunguska Space Phenomenon public state fund. In 2004, he headed off to Tunguska, proclaiming, "We intend to find proof that not a meteorite but an extraterrestrial spaceship crashed with the Earth." Not surprisingly, that's exactly what they supposedly found. They claim to have found a large metallic block that is part of the wreckage from the spacecraft (see the column by Leon Jaroff, http://tinyurl.com/lp4cf7). Five years later, we're still waiting for proof that he found anything extraterrestrial, although Labvin now says he found ten quartz crystals, some of which have holes so they can be linked in a chain. Friedman seems not to consider the possibility that he stumbled upon a piece of extraterrestrial jewelry. He has, however, now determined that the UFO was on a suicide mission to save earth. Science marches on.

Friedman seems not to consider the possibility that he stumbled upon a piece of extraterrestrial jewelry. He has, however, now determined that the UFO was on a suicide mission to save earth. Science marches on.

* * *

I want to call attention to an exciting new Web publication by UFO skeptic Tim Printy of Manchester, New Hampshire. He is calling it "SUNlite" in honor of the *Skeptics UFO Newsletter* (SUN) that was written by the late Philip J. Klass, the dean of all UFO skeptics. (Some issues of Klass's SUN are available online at www.csicop.org/klassfiles/Home.html). UFO skeptics now have an unexpectedly rich and sophisticated new publication for investigation and discussion, and Tim invites contributors to submit articles and reviews. He plans to publish six issues per year. In the first issue there are articles highlighting certain ever-changing Roswell claims, reviews of UFO-related blogs and TV shows, as well as "The Phil Klass Almost Nobody Knew" by Gary P. Posner. You can find SUNlite at http://home.comcast.net/~tprinty/UFO/SUNlite.htm. □



Exercising the Brain Gym

Q: What can you tell me about the Brain Gym? It seems to make all sorts of amazing claims and is apparently very popular in Britain, but I can find little hard evidence that it does anything.

—J. Johnson

A: The Brain Gym is a commercial training program created in the 1970s by educators Paul and Gail Dennison. It has been marketed worldwide and is used as a teaching program in Canada and the United States, in British state schools, and in other places.

In a nutshell, Paul Dennison claims that learning problems can be overcome using twenty-six movement exercises divided into three categories: focus, laterality, and centering. These exercises, according to Brain Gym materials, create new pathways in the brain and "activate the brain for optimal storage and retrieval of information."

The Brain Gym program comes complete with a slew of coursebooks, teachers' manuals, and other materials. It's a slickly packaged program that promises to "help children." And who doesn't want to help children?

But is there any scientific validity to the Brain Gym program or principles? Well, that's where things quickly get murky. The program's theoretical basis has been researched and fully discredited; there is simply no evidence that the Brain Gym works—or even that it *could* work. Australian teacher and skeptic Margaret Kittson (2008) examined the Brian Gym, concluding that it "consists of elements cobbled together from all over the pseudoscientific ball park," including Applied Kinesiology (based in part on "chi" energy theory).

Dr. Ben Goldacre, the "Bad Science" columnist for *The Guardian* (U.K.), has long been a vocal critic of the Brain Gym, referring to it as "transparent pseudoscientific nonsense" with "a scientific explanatory framework that is barkingly out to lunch." Following his original debunking of the Brain Gym in one of his columns, Goldacre (2006) was shocked to receive an outpouring of angry and defensive letters from teachers who offered testimonials affirming their faith in the program. Kittson received the same reaction from her teaching colleagues when she questioned the Brain Gym. These educators' inability to distinguish anecdote from evidence is very troubling.

When challenged to provide any scientific evidence for his program, Dennison admitted that he is not medically qualified and that many of Brain Gym's ideas are unproven and based on his "hunches." Many claims contained in the program materials are self-evidently false (such as that "processed foods do not contain water"). Paul Dennison's rambling, nonsensical defense of his program during an April 2008 interview on the British news program *Newsnight* (in which the presenter rightly called Brain Gym claims "arrant nonsense") is pure skeptical comedy gold; a clip of the show can be seen at www.youtube.com/watch?-v=YjRhYP5faTU.

There is one area in which even the Brain Gym's staunchest critics admit it is not completely worthless: it encourages exercise. Any exercise at all can improve cardiovascular and mental fitness, so in that regard the Brain Gym is about as helpful as anything else that gets kids out of their seats and moving. □

References

Goldacre, Ben. 2006. Exercise the brain without this transparent nonsense. *The Guardian*, 26 March. Available online at www.guardian.co.uk/science/2006/mar/25/badscience.uknews.

Kittson, Margaret. 2008. Brain Gym: A cautionary tale. *The Skeptic* (Australia), Summer, 28(4): 34.

Power Line Panic and Mobile Mania

What is the physics that underlies any possible linkage between mobile phones, power lines, and cancer?

S.T. LAKSHMIKUMAR

Headlines in the news periodically highlight the "latest" investigation into the link between cancer and either use of mobile (cell) phones or residing near power lines. Some reports claim that there is statistically significant evidence for such linkages yet others deny this. However, both typically include a disclaimer that "scientists claim that there is no physical basis for such a linkage." The purpose of this piece is neither to investigate the large amount of data that has been generated nor to persuade the public health authorities on the utility (or otherwise) of such investigations. It is to bring out as clearly as possible what scientists mean when they say "there is no physical basis for such a linkage." The strength of this argument may enable

individuals to be less worried about this "panic and mania."

What is the physics underlying the operation of both power lines and cell phones? Quantum mechanics. How well is this theory established? If this theory were used to calculate the diameter of Earth using paper and pen, one would get a value that agrees with the measured value within the thickness of a human hair. There is really no "experimental" reason to doubt quantum mechanics. It can be called the crown jewel of all science.

What is the relevant idea of quantum mechanics we need to understand power lines and cell phones? The first idea is that all electromagnetic radiation consists of small particles called photons. The energy of a photon is determined by a formula called Planck's law: the energy of the photon increases as the frequency increases. Now consider a photon of yellow light. This has a frequency of some 5×10^{14} Hz. The energy of such a photon is approximately 2 electron volts (eV; obtained by multiplying the frequency by 4.13×10^{-15}). If there is an increase in the power, only the number of photons increase, not its energy. Thus, a standard yellow sodium lamp with higher power rating provides more light with more photons, but each photon still has exactly the same amount of energy. A typical cell phone uses a frequency of 1×10^{9} Hz. The frequency used in a household microwave oven is 2.45×10^{12} Hz. Therefore the energy of photons in these sources will be lower than that of yellow light by a factor of a thousand for the microwave oven and a million for the cell phone. The frequencies of a standard 60 Hz power line will be further lower by a factor of one million. Roughly one million photons in a power line together have the same energy as a single photon in a microwave oven, and a thousand microwave photons have the energy equal to one photon of visible light. A photon in an X-ray machine has a frequency of 3×10^{17}, or energy a thousand times larger than the photon of visible light.

The next important quantum concept is the way in which a photon can interact with atoms or molecules. Only electrons in molecules or atoms can absorb the energy in a given photon. The nucleus of atoms cannot absorb any but the most energetic photons called gamma rays, which are not relevant here. If the energy in the photon is 1–3 eV, the electron can break bonds between atoms in the molecule if it is absorbed. This is obviously a source for disruption of the biological processes in the cells and can perhaps lead to lasting damage—maybe even cancer. However, only ultraviolet photons (which have higher energy than visible photons) have the required energy to break this bond, which explains the link between excess UV exposure due to sunbathing and skin cancer. A beneficial example is the formation of vitamin D due to exposure to sunlight. Visible light cannot cause this since it is reflected by the skin.

What happens with photons of higher energies, for example an X-ray photon? Now the atom as it dissociates from its molecule has enough kinetic energy to knock out other atoms from other molecules, very much like a cannon ball. Thus for every X-ray photon, many biological molecules are damaged. Despite the fact that most X-rays penetrate the body without any effect (this is the reason bones become visible; the flesh hardly absorbs any X-rays), even the few that get absorbed can cause damage. If only a few molecules are damaged, the body can repair itself. The conversion of an ordinary cellular activity into cancerous activity is the result of this damage, hence, the strict low limits to permitted exposure.

What if the energy is low? Can an atom absorb two photons, each contributing half the energy? This is certainly possible, but there is a problem. The process of absorption of a photon by an atom typically takes about a nanosecond or less, so the two photons must be absorbed by the same atom in this short time. Since the photons and the atom are both very small and this event takes place in such a brief period of time, it is extremely rare. In a laboratory this double absorption is induced with lasers. In a laser, the photons emerge after fixed intervals of time and travel in the same direction. Even with this advantage, only about one in a million photons in the laser contributes to such processes. Neither the cell phone nor the power line is a source of laser radiation, thus their photons will all be moving independently of one another. Also, about a thousand microwave photons have to get onto the same atom instead of merely two or three. Obviously there is no chance for these very small energy photons to cause damage to molecules by exciting the atom and causing molecular dissociation and damage.

What are the other ways in which low-energy photons can interact with matter? In the case of infrared photons, those with typically 0.1 to 1 eV energy, the result of absorption is the stretching or bending of molecules. The energy is shared by all the atoms in the molecule and the molecules vibrate as if the atoms were linked together with springs. This vibration causes heating. A typical sun lamp in action for heat therapy or relaxation of sore muscles uses these photons. Special thermal treatments for treating cancer that heat the tissue by about 8° C

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have been demonstrated to improve the performance of other cancer therapies in some types of cancers. The first point to note is that this level of tissue heating is not disruptive to normal cell activity. So generally speaking, even infrared photons cannot cause molecular damage the way UV radiation can. As before, multiple photon absorption is not possible.

When we consider absorption of photons of lower energy such as microwaves, the physical consequence cannot be vibration or bending since this requires much higher energy. The molecules, however, can rotate. This rotation increases the energy, which is equivalent to an increase in temperature. The microwave oven works at a frequency specifically chosen for absorption by water molecules in the liquid state when the water molecules can rotate. Popcorn pops because the free water molecules in the kernel heat and become steam that explodes the corn. The dish does not get heated by the microwaves because it doesn't contain any liquid (free-to-rotate) molecules of water. The dish only gets heated by contact with the hot water inside. The primary requirement for rotation of a molecule is small size. Most molecules in the human body are polymers and so cannot rotate. Only water or other smaller molecules can absorb microwave photons and then heat up. Even when absorption is possible, this cannot easily result in heating by several degrees unless power levels are very high. A typical microwave oven operates at 500–1000 watts. Extrapolating from the example of popcorn and microwave cooking to claim that molecules' and atoms' absorption of photons of smaller energy will cause heating that will induce some cancers is quite misguided.

Finally we come to the case of the photons of the cell phone, which have even lower energy. These cannot cause even molecular rotation, and their absorption results in physical motion, or translation of the individual molecules. Naturally, the amount of energy that can be transferred to any molecule is very small, and the increase in its velocity and hence heating is therefore extremely small. Once again, large biopolymers heat much more slowly. The easiest way to recognize this extremely poor interaction between very low-energy photons associated with the radio frequency (RF) in cell phones and molecules is to remember that the small amount of power being transmit-

Viral Video Cell-Phone Scare

In June 2009 a new urban legend was born—that the power generated by cell phones can cook popcorn. A series of videos on YouTube appeared to show four users popping a table full of corn kernels simply by pointing their ringing phones at them. The implication for the casual observer was clear: if cell phones emit enough radiation to pop corn, imagine what they are doing to your brain!

The execution was new, but the scare was not. The media has been reporting for years on alleged links between cell-phone usage and brain tumors, and alarmist headlines continue to excite the public regardless of the facts. As far back as 2000, spoof videos were being created of eggs being cooked by cell-phone power. The creator of the first of these, electronics expert Charlie Ivermee, created his video to poke fun at media scare stories but was surprised when it was taken seriously. As an early viral, which in those days were mostly circulated by e-mail, it accidentally exploited a powerful stimulus: fear. Despite the creator's satirical intention, he had underestimated the public's willingness to demonize new technology and find cancer around every corner.

Fast forward to 2008 when YouTube videos imply that cell phones emit enough radiation to cook popcorn. The viewer is left to assume that it's true, although a moment's thought about the temperature needed to pop a kernel of corn—150 degrees Fahrenheit—might give even the average YouTube viewer pause. If your cell phone reached that temperature, you'd very probably notice. It's not hot enough to melt plastic, but it's hot enough to burn skin.

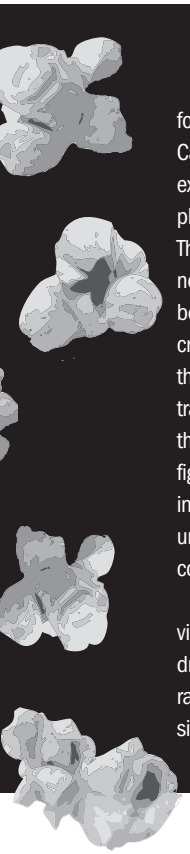
So who would benefit from pandering to public concerns about health and cancer? Satirists, certainly, who are then free to expose their mockery of scaremongering. But the brains behind the popcorn video had another motive: profit. Cardo Systems describe themselves as "an established world leader in the field of wireless Bluetooth communications." In other words, they make the wireless headsets that help you avoid putting your mobile phone to your ear. Useful for hands-free chatting while driving, but perhaps a horrible fiery death in a car wreck wasn't considered appropriate material

ted by the phone is traveling several kilometers to the tower. Also, the cell phone has to transmit this very little power in all directions. The small power in the direction of the tower passes through several walls and other obstructions, even people, without impeding the communication. This explains the usual statement that the power levels in these situations are well below the limits set for exposure to RF sources. As for the typical 50–60 Hz power lines, the photon energies are too low for any meaningful interaction with atoms.

The presence of power lines can spoil the view, can lower market value, or even psychologically irritate one, but there is simply no reason to worry about cancers of any variety from their presence.

Another possibility mentioned is formation of hot spots. A magnifying lens can focus sunlight and start a fire. The key issue here is the relation between the structure of a magnifying glass and the photons that it can focus. A magnifying-glass surface is polished to approximately the wavelength of photons. The shape of the lens and uniformity of the refractive index of glass over dimensions much larger than the wavelength are also necessary for focusing. The wavelength of radio frequency from a cell phone is about 30cm. It is not reasonable to expect a medium such as a human body to act as a focusing lens for waves of such dimensions emanating from a point source. The diverging rays from the mobile phone have to somehow be converted into a convergent beam. Even then the powers involved are too small for any meaningful number of photons to converge and then heat the localized region to trigger cancer formation. The wavelength of a photon in a microwave oven is approximately 0.1mm. The metallic walls of the oven reflect the photons into the oven space. Parabolic reflectors for focusing RF would have to consider the wavelength. The radiotelescope dish antennas focus RF; small mobile phones do not. In the case of power lines, the frequencies—and hence the energies—are smaller while the wavelengths are correspondingly longer, which makes worry about these photons unrealistic.

Unless one is willing to discard the concept of photons, Planck's law, and the interaction between photons and atoms—and thus the entire body of quantum physics—it is simply not possible for the photons associated with either a power line or a cell phone to cause cancer. Mobile phones have caused major problems, especially auto accidents from distracted driving, but one thing that need not be feared is the possibility of the "radio waves" causing cancer. The presence of power lines can spoil the view, can lower market value, or even psychologically irritate one, but there is simply no reason to worry about cancers of any variety from their presence. □



for a viral video. The creative team at Cardo who created the popcorn videos exploited existing concerns about cell-phone radiation and made them legend. The "anonymous" videos were viewed nearly 10 million times in just two weeks before Cardo stepped forward to take credit, although not, initially, to debunk the pseudoscience. Cardo claims that traffic to its Web site doubled in the days the videos were active, and although no figures have been supplied to show an increase in headset sales, it would be unusual for such a viral hit to have no commercial impact.

For those wondering, the secret of the video is mundane. Popped kernels were dropped onto the table as the phones rang, and the unpopped kernels were simply edited out. It is a simple trick that any media student could achieve in a few hours, but Cardo created an urban myth so instantly popular it attracted international media and a place of honor at the urban legend Web site Snopes.com.

Cardo seemed unconcerned about potential accusations of scaremongering; at the time it claimed openly that its headsets reduce the amount of RF power going to users' ears but did not explain why that's a benefit. The popcorn video viewers may have their own motives for purchasing a headset, but if reducing cancer risk is one of them they should perhaps consider themselves misled.

—Tracy King

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EMF and Health: A Growing Hysteria

LORNE TROTTIER

Angry citizens' groups in hundreds of different communities across the United States protest against the location of new cell-phone towers. Larry King airs another discussion on cell phones and brain cancer. The European Parliament passes a motion criticizing the World Health Organization (WHO) and its own science advisory board over these issues. What's going on here? It's a growing hysteria over the possible effects of electromagnetic fields (EMF) on health.

Electromagnetic fields are produced by every electrical or electronic device, including power lines, computers, microwave ovens, and wireless technologies such as cell phones, WiFi, and radio and TV broadcasting. Radio waves, visible light, and X-rays are all forms of EMF and are part of the electromagnetic spectrum. Electromagnetic waves cover a vast frequency range from extremely low frequency (ELF) of 30 Hz (cycles per second) or less up to hard gamma rays at over 300 EHz (an EHz is 10^{18} Hz).

There are only three scientifically established mechanisms where EMF is known to cause health effects. These are: induced voltage gradients and/or electric currents in the body, thermal effects, and ionizing radiation effects. The relative importance of each mechanism varies with frequency. Extensive scientific testing has been used to measure these effects and to establish safe limits. Induced voltages and/or current effects occur at low frequencies in the range of 0–3 KHz. Thermal effects in the frequency range of 30 MHz to 300 GHz occur when living tissue absorbs enough EMF power to cause heating. This is the principle of a microwave oven. Ionizing radiation can break the electron bonds that hold molecules like DNA together and is carcinogenic. Ultraviolet light, X-rays, and gamma rays are the only forms of ionizing EMF. In the U.S., FCC regulations set limits on permitted exposures for the public at 1/50 the level at which harmful heating effects may occur. Actual exposures are hundreds to thousands of times lower. The photon energy of cell-phone EMF is more that 10 million times weaker than the lowest energy ionizing radiation.

How do we know that these mechanisms are the only harmful effects of EMF? In its 2004 document "What are Electromagnetic Fields: Health Effects" the WHO said: "In the area of biological effects and medical applications of non-ionizing radiation approximately 25,000 articles have been published over the past thirty years. Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the WHO concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields."

Yet in a recent motion passed in April 2009 by the lopsided margin of 559 to 22, the European Parliament called upon its Commission "to launch an ambitious program to gauge the electromagnetic compatibility between waves created artificially and those emitted naturally by the living human body with a view to determining whether microwaves might ultimately have undesirable consequences for human health" and "calls for particular consideration of biological effects . . . especially given that some studies have found the most harmful effects at lowest levels . . . and developing solutions that negate or reduce the pulsating and amplitude modulation of the frequencies used for transmission. . . ."

Aside from the nonsense about "artificial waves" and "lowest level amplitude modulation," the Parliament's own scientific advisory body the SCENIHR had just released a compre-

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hensive new report (January 2009) "Health Effects of Exposure to EMF." One of its key findings (p. 4) was: "It is concluded from three independent lines of evidence (epidemiological, animal, and in vitro studies) that exposure to RF fields is unlikely to lead to an increase in cancer in humans." It also echoed the findings of the WHO (p. 25): "Although new exposure sources such as mobile phone base stations, cordless phone base stations or wireless networks are relatively recent, exposures from these sources are generally lower than the ones investigated in these studies on broadcast transmitters. Thus, there appears to be no immediate need for further studies related to these sources." Most of the world's major national public health organizations, including the FDA and the CDC, have come to similar conclusions.

But in its motion, the European Parliament not only ignored the findings of its own scientists, it even called into question their scientific integrity! It is as if the U.S. Congress had voted by an overwhelming margin for more research on UFOs and had questioned the integrity of mainstream scientists who say there is no good evidence that UFOs exist. What's going on here?

In its motion, the European Parliament not only ignored the findings of its own scientists, it even called into question their scientific integrity!

Alarmist groups are fueling a growing mass hysteria over supposed health risks from EMF. These "health risks" range from general complaints, such as fatigue and headaches, all the way to brain cancer. The fact that EMF is also referred to as electromagnetic "radiation" and is becoming more pervasive yet cannot be seen adds to the alarm. A minority of scientists, some of whom have published an alarmist document called the Bio-Initiative Report, have helped fuel the hysteria. Yet the Bio-Initiative Report has been widely criticized in the scientific community for promoting only poorly conducted studies that support its alarmist views while ignoring far more rigorous and comprehensive studies that show no danger.

A growing industry of fraud artists is taking advantage of the fact that many of the supposed symptoms of EMF appear to be psychosomatic. They are offering a broad variety of quack remedies that will absorb "harmful" EMF or otherwise shield the user. These products range from pendants worn around the neck to a patented $727.50 "i-H2O activator" that "structures all the water you use."

To support their concerns, alarmist groups point to the fact that insurance companies are excluding coverage for health risks of EMF from liability coverage. The position of Swiss Re, one of the world's largest reinsurers, is quite revealing:

Photo: Newscom

Robins des Toits, a French association dedicated to protecting people against supposed health risks of electromagnetic fields, measures the pollution level on Rue de Charenton, Paris, France.

> We assess the risk of change as being extraordinarily explosive not because weak electromagnetic fields might, contrary to expectations, prove to be hazardous after all. We consider the risk of change to be so dangerous because it is evident that a wide range of groups have great political and financial interest in electrosmog being considered hazardous by society. ("Electrosmog—A Phantom Risk")

One example of this is Lennart Hardell, a leading alarmist scientist, who was an expert witness in an $800 million liability lawsuit against a cellular-phone provider for a single brain cancer patient. His scientific testimony was resoundingly rejected by the judge for lacking in scientific credibility. However, as Swiss Re has stated, the minority group of scientists along with an armada of lawyers, consultants, and alarmist groups are likely to continue their pseudoscientific crusade. There are huge fortunes to be made from successful liability lawsuits. In bowing to pressure from alarmist groups, the European Parliament has just given them a giant boost. It has also set a shocking precedent by questioning the integrity of mainstream public-health science.

A new Web site has been established that provides a wealth of information about EMF and Health using evidence-based science. Go to www.emfandhealth.com. □

Violent Video Games: Dogma, Fear, and Pseudoscience

Video games are at the center of a modern media-based moral panic. Too often, social scientists have fueled the flames and eschewed good scientific practices.

CHRISTOPHER J. FERGUSON

School shootings at high schools and universities are rare but shocking events. Across the last decade or so we have come to understand a little about the psychology of the young men who carry out such horrific crimes. Most typically they are emotionally disturbed, often depressed, feel socially isolated and alienated from society, and are filled with rage and hatred. It is natural for society to want easy answers about how such a phenomenon can be controlled. Social scientists want to give those answers. Unfortunately, the human inclination to believe we can predict the unpredictable and control the uncontrollable often leads us to mask the language of fear and irrationality in the language of science.

In the case of school shootings and youth violence in general, some scientists have answered the public demand for a culprit. The alleged corrupting influence of violent video games has been identified by some as one root cause. Ignoring the youth-violence data, ignoring inconsistent data from multiple studies, even ignoring contradictory data from their own studies, some social scientists have presented the research on violent games as strong, consistent, and unequivocal. In truth, it is none of these things. There is a huge gap between the effects of violent video games as presented by some social scientists and the actual scientific data on the effects of violent video games. This gap between social science and reality has led to a moral panic regarding the effects of violent video games on youths.

Debates about the corrupting influence of media are nothing new. The history of media-based panics includes concerns about Greek plays (Aristotle liked them; Plato didn't), translations of the Bible (William Tyndale and others were harassed or executed for translating the Bible into English or other non-Latin languages), novels, jazz, rock and roll, rap, movies, comic books, Dungeons and Dragons role-playing games, Harry Potter, television, and now video games. Each of these panics hinged upon belief in a highly suggestible youth populace unable to distinguish fiction from reality, something children can actually do beginning by approximately age three (Woolley and van Reet 2006). In most of these cases we can look back and see how foolish these fears were. We'd love it if our children would read more, take an interest in classic Greek plays, or get more into the music that we older folks enjoy. Society's elders repeat the same cycle from generation to generation, becoming suspicious of new art forms that they don't use and have no use for. It appears to be part of human nature to disparage youth culture whenever it emerges, perhaps as a means of maintaining dominance in the guise of "protecting children." Activists such as former lawyer Jack Thompson and David Grossman might be forgiven for inflaming fears with exaggerated claims. Grossman, for instance, has promulgated the false notion that the military uses video games to desensitize soldiers to killing (they do use simulators for visual scanning and reaction time and vehicle training, but they seem more effective in reducing accidental shootings than anything else). These individuals have an activist agenda similar to many pressure groups, and we expect them to present only a single side of an issue to drive their point home far beyond the bounds of objectivity.

We expect more from scientists, for whom objectivity and skepticism are essential tools. Certainly science takes wrong turns, but objectivity, skepticism, and the willingness to challenge old paradigms allows science to self-correct over time. To be clear, the hypothesis that violent video games increase aggression and even violent criminal behavior is a reasonable empirical hypothesis. Given that data in social science tend to be murky since they continue to rely on rather flawed null-hypothesis significance testing, there also is nothing unacceptable in taking either position in an ongoing debate such as that on media violence or video-game violence specifically. However, individuals with PhDs cease functioning as scientists when they make active efforts to stifle debate, ignore opposing research, ignore real-world data, fail to inform the public about the limits of social-science research, and make tenuous connections between survey questionnaires or consensual "aggression" games in the laboratory and mass-shooting incidents or the phenomenon of youth violence more generally in real life.

Scientists' Statements

When most people read about studies suggesting something along the lines of "eating plums increases aggression," they likely picture children or adults hitting, kicking, or screaming at one another after consuming plums. However, most aggression studies involve either individuals filling out questionnaires or engaging in mutually consensual game-like activities. Aggression measures used in laboratory studies of media violence have included everything from popping balloons, rating people's job performance (after those people have insulted participants), filling in the missing letters of words, and playing a consenting reaction-time

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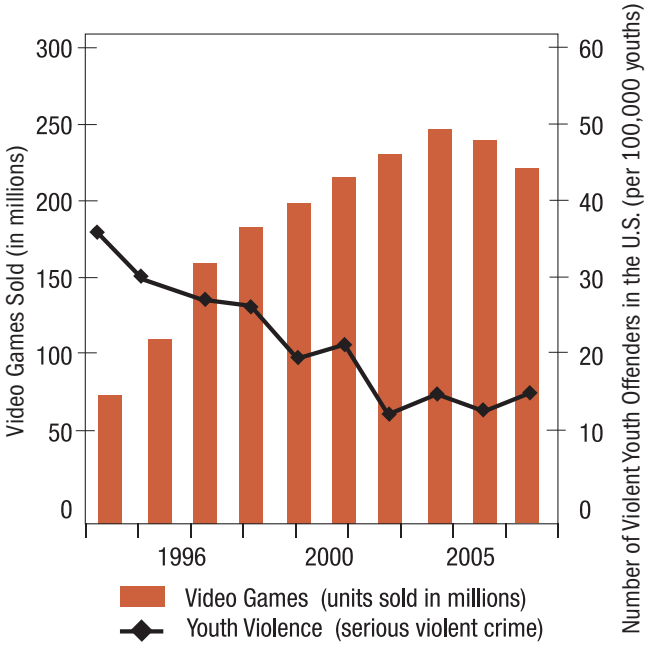
game in which players can deliver non-painful noise bursts (like the white noise on a television set) to their opponent. Whether these "aggression" measures are valid predictors of real-world violence remains an open debate.

It must also be noted that aggression and violence are not synonymous, and not all aggression is bad. Being aggressive in moderate amounts is likely adaptive. However, the limits of aggression measures used in studies of video games have not stopped some scholars from making claims, explicit or implicit, that their research can be generalized to extremely violent behaviors on the part of children or adults. Video game researchers commonly begin their research articles by raising the fears of mass school shootings (Anderson and Dill 2000; Anderson 2004) or even the September 11 terrorist attacks (Bushman and Anderson 2002). There may be valid scholarly reasons for discussing such incidents, of course, although objective science would dictate the necessity of making clear the gulf between research procedures currently employed and these extreme events.

A more recent report (Anderson et al. 2008, funded in part by the activist group National Institute of Media and the Family [NIMF]) suggests that the weak correlations between playing video games and self-reported aggression can be generalized to youth violence. The authors fail to make clear that they didn't measure youth violence and also fail to note that



youth violence has been experiencing a precipitous fifteen-year decline during the same period in which video games have soared in popularity. Although the data do not highlight violent-game sales as opposed to nonviolent-game sales, some authors have found at least mild violence to be common even in E-rated games (E is for "everyone," the lowest rating analogous to a G-rating in movies; Thompson and Haninger 2001). Thus it seems safe to assume that average violent content in video games has either remained constant or increased during this time period.

A common element of these articles is the issue of "citation bias," the failure to honestly report on research results that don't support the authors' own hypothesis. As a result the study falsely communicates to the scientific community a greater certitude and unanimity of results than actually exists. The papers cited above all fail to note the considerable number of studies that do not find a relationship between violent video games and increased aggression. For instance, Bushman and Anderson (2002, p. 1679) claim, "Despite the recency of this genre and the relatively small size of the research literature, there is sufficient research to conclude that violent video game exposure can cause increases in aggressive behavior and that repeated exposure to violent video games is linked to serious forms of aggression and violence," while failing to note that other scholars would disagree with this position (e.g. Guantlett 1995; Olson 2004; van Schie and Weigman 1997).

Of greater concern is when authors ignore their own results to drive home their *a priori* hypothesis. Anderson and Dill (2000) used four separate aggression measures in their laboratory study and found weak significance for only one of the four (had they employed a proper statistical correction for multiple analyses, even the fourth analyses would have been non-significant). Nonetheless they ignore the three non-significant results and focus on the single barely significant result to promote a hard causal view of violent game effects on aggression. Although I suspect that these authors are well-meaning and genuinely concerned about children, their statements do not always reflect a careful objective analysis of the data. In fairness, the authors do provide arguments for why one aggression measure should be highlighted over others. For instance, they suggest that two of the measures may have been compromised by their own instructions to participants to focus on the other two measures. Of the last two, they argue that provoked aggression (occurring after trials in which the participant loses) may be related to aggressive behavior more than unprovoked aggression (occurring after win trials). However, post-hoc reasoning could be used to support the precedence of any outcome over others, and other video game researchers have, indeed, made exactly the opposite argument, with unprovoked aggression taking precedence (Bushman, Baumeister, and Philips 2001).

I believe that these authors have ceased functioning as scientists and have begun functioning as activists, becoming their own pressure group. Indeed, in at least one article, the authors appear to actively advocate censorship of academic critics and to encourage psychologists to make more extreme statements in the popular press about violent video-game effects (Gentile, Seleem, and Anderson 2007).

Although some studies certainly do appear to indicate at least weak correlations between violent games and increased aggression, many other studies, including several of my own (e.g. Ferguson et al. 2008; Ferguson and Rueda in press) as well as research by John Colwell, Cheryl Olson, Lawrence Kutner, Grant DeVilly, and others, find no such effect. In a recent meta-analysis of video-game and other media-violence studies published in the *Journal of Pediatrics*, my colleague

John Kilburn and I found that these studies effectively add up to zero (Ferguson and Kilburn 2009). More worrisome is that many studies employ unstandardized measures of aggression that may allow researchers to pick from among multiple outcomes, potentially picking outcomes that best support their hypotheses. Such measures were found to produce higher effects than better standardized and well validated aggression measures. The closer that measures came to actual violent behavior, the closer to zero the effects became.

Video-Game Violence, Smoking, and Lung Cancer

One argument some scholars have used to promote the view that video-game violence is a looming problem is the argument that media-violence effects are similar in magnitude to those of smoking on lung cancer (Bushman and Anderson 2001). The effects of smoking on lung cancer rates are well known to be among the strongest in medical science. Among male smokers, the risks of lung cancer are twenty-three times stronger than for non-smokers. Lung cancer among non-smokers is very rare (and almost always related to clear genetic risk). Instead of using the standard "relative risk" effect size estimate for smoking and lung cancer used in medical research, Bushman and Anderson (2001) tried to convert it to a correlational coefficient. The resulting coefficient is surprisingly low and, indeed, not much larger than the statistic they report for media-violence effects. Such a lofty claim for media-violence effects should have invited skepticism, particularly with violent crime rates plummeting to 1960s levels while media violence is soaring in popularity. These same statistics, in fact, have been used to support the importance of ESP research (Bem and Honorton 1994) among other psychological (or apparently parapsychological) findings. Unfortunately, skepticism was in short supply, and this comparison has been repeated multiple times, including in testimony to the U.S. Congress.

The statistics upon which this comparison is based are flawed, however. First, the authors chose a statistic for the effect size of media violence that most meta-analytic reviews (indeed including the authors' very own meta-analysis in the same paper) find to be too high. It also turns out that it's not so easy to convert medical "relative risks" into correlational coefficients. In a paper in the American Psychological Association journal *Review of General Psychology* I note that the statistics on which these calculations are based are deeply flawed and tend to grossly underestimate medical effects. I'm not the first to point this out—Block and Crain (2007) pointed out much the same issue—but I suspect our cautionary voices have largely been ignored.

What about Those School Shooters?

It is certainly true that most (although not all) school shooters played violent video games. So do most other boys and young men. Concluding that a school shooter likely played violent video games may seem prescient, but it is not. It is about as predictive as suggesting that they have probably worn sneakers at some time in the past, are able to grow facial hair, have testicles, or anything else that is fairly ubiquitous among males. Michael Moore, in his famous documentary *Bowling for Columbine*, noted that the Columbine shooters were avid bowlers. Perhaps a propensity for bowling as a hobby is correlated with aggression? As such, playing video games is an illusory correlation as far as aggression is concerned and explains nothing. This was highlighted best during the 2007 Virginia Tech shooting. Soon after the shooting, pundits such as Jack Thompson and Phillip McGraw ("Dr. Phil") speculated that the shooter must have been a frequent violent gamer (McGraw 2007; Thompson 2007). This was an easy guess given that most young males play violent games, however the official investigation revealed quite the opposite: the shooter, Seung-Hui Cho, did not play violent games at all.

This is a cautionary note for the research on violent video games. Any two variables that are gender-based are likely to display some correlation. Males play more violent games than females and are also more aggressive on average. Thus we expect to see a correlation between violent games and aggression . . . but also between aggression and growing beards, participation in sports, wearing pants rather than skirts, and a preference for dating women—in short, anything else that is a male-dominated activity. Sadly, many studies of video games miss this important issue and fail to control for something as obvious as gender. Such correlations should be interpreted with caution. Since school shooters don't often volunteer for participation in psychology research, little is honestly known about their media consumption relative to normal males. However, a report by the U.S. Secret Service (2002) suggested that violent-media consumption, including video-game violence, is surprisingly low, not high, among this population.

Delineating Science and Pseudoscience

The main arguments raised in favor of the correlation between video-game violence and aggression include the argument that the research is consistent and strong; that aggression measures used in the research predict real-life aggression and violence; and even that the effects of video-game and other media violence approach the strength and consistency of the research found linking smoking with lung cancer. Such comments should invite careful inquiry and even normal scientific skepticism. Indeed a careful examination of the evidence finds these claims to be false. Aggression measures used in much of the research do not seem to predict real life behavior very well. Indeed most of these measures are not used clinically to predict violence, and even with well-validated clinical measures violence prediction remains dicey. The research is inconsistent at best, weak where relationships are concerned, and nowhere near the strength, consistency, or quality of the research on the link between smoking and lung cancer (which benefits from the unambiguous outcome of death as opposed to proxy aggression measures of questionable quality). At the extreme, the pseudoscience of media-violence effects has resulted in outlandish claims even from professional organizations. For instance the American Academy of Pediatrics (AAP) claimed that "Since the 1950s more than 3,500 research studies in the United States and around the world using many investigative

methods have examined whether there is an association between exposure to media violence and subsequent violent behavior. All but 18 have shown a positive correlation between media exposure and violent behavior" (Cook 2000). This statement is a blatant misrepresentation of the facts. Not a single meta-analysis of media violence has located more than a couple hundred studies, including all forms of media violence, not just video games, and these have included many unpublished studies of questionable quality. Freedman found about 200 studies in his 2002 review (including non peer-reviewed studies), which were about evenly divided between those that did and those that did not find effects. That the AAP could raise such a fallacious claim unchallenged is remarkable.

The investigation of video-game violence effects is not, in and of itself, pseudoscientific; the hypothesis is legitimate. My concern is the manner in which some scientists have tried to protect rather than objectively study this hypothesis, oftentimes distorting or miscommunicating the facts to the scientific community and the public at large. In some cases this may be driven by activist/lobbying groups such as the NIMF, which

This is a cautionary note for the research on violent video games. Any two variables that are gender-based are likely to display some correlation.

has funded several anti-game studies. In one recent study supported by the NIMF (Gentile 2009) the author suggested that approximately 8 percent of youths exhibited "pathological" patterns of video-game play (commonly referred to as video-game "addiction"). The author (the director of research for the NIMF) stated multiple times (including in the title) that this sample was nationally representative, and he claimed to have used a "stratified random sample." A close read reveals that the "stratified random sample" is in fact taken from a larger convenience sample of youth who self-selected into the sample online. Youth who are online so often as to volunteer for online surveys may, naturally, be particularly prone to pathological Internet use and certainly don't represent "average" youth. Taking a smaller random sample from a larger convenience sample does not convert a convenience sample into a random sample. Even if the study had no other problems, this 8 percent figure taken from a convenience sample of potentially heavy Internet users is meaningless and uninterpretable. However, this issue was not well communicated to either the scientific community or general public. Activist/lobbying groups regularly inflate statistics to sell books or speaking engagements and thus may have a profit motive for inflating fears about a particular issue. That the scientific community outsources science to such organizations is a worrisome trend.

That said, I acknowledge that a rational, objective argument could be made for violent video-game effects. I would likely disagree with many of those conclusions based on the evidence, but debate is normal and healthy in the social sciences; I would respect an objective and honest appraisal of the evidence that differed from my own. Such appraisals already do exist. As one example, Patrick Markey (e.g., in Markey and Scherer 2009) has been examining whether certain individuals with preexisting mental health problems may be prone to violent game effects, even if most individuals are not (violent video games may thus be like peanut butter—a harmless diversion for the vast majority but potentially a problem for a tiny minority). Although I may disagree with some of Markey's conclusions, he exhibits caution, objectivity, and balance in his reviews of current literature and in his measured conclusions from his own research. Although we may differ, I respect the views of such scientists who are careful to note the limitations of the science and encourage scientific discourse rather than attempting to discontinue debate in favor of their own view. Too often such scientists are drowned out by the voices of others who have promoted a radical ideological view, indulged in "citation bias" (citing only research favorable to one's own view), and implied any views differing from their own are the product of the video game industry rather than legitimate scientists (I am, in fact, unaware that the video game industry funds or supports any behavioral research on aggression, and I, for one, certainly have no affiliation with it).

The Pseudoscience of Video Games

In summary, some scholars of video games, and perhaps the psychological community in a larger respect, have ignored data that conflicts with the alarmist view of violent game effects and have made extreme, hyperbolic statements that are not supported by data or are based only on faulty statistics. Some scholars have invalidly also made comparisons in their work between violent video games and school shootings or other violent incidents. How has this irresponsibility been allowed to go on for so long?

One possibility is simply that social scientists are prone to the same human foibles as everyone else, including making emotional rather than objective evaluations of their own research and that of others. It is very easy for social science to blur into activism, politics, and social engineering. Media violence and video games is certainly not the first example and surely won't be the last. Even in regard to the cyclical media-violence panics, the involvement of social science in promoting unrealistic fears across the nineteenth and twentieth centuries is well documented. Grimes, Anderson, and Bergen (2008) have an excellent book that discusses how politics and scientific dogma (e.g., the tabula rasa belief that we are *forced* to imitate anything that we see in the media) have done much to damage the media-violence field as an objective science. Indeed, they express concern that psychological science has become an industry that produces factoids on demand to an agitated populace. This concern is echoed by Gauntlett (1995).

The murkiness of social-science research makes it very easy for objectivity to be lost. The "standards of evidence" in psy-

chological science are much lower than for the hard sciences. This is a simple reality that psychologists must bear but that many choose to deny, hurt by the implication that we are something lesser than the hard scientists. The weaknesses of social science allow long-outdated theories to continue to haunt the graveyards of psychology far past their prime. Witness the immortality of psychoanalysis or tabula rasa, for instance. Unfortunately, the willingness of psychologists to stray into activism and social engineering confirms the very concerns that hard scientists have regarding our discipline.

Summations of the research on video-game violence find that they have either no effect or only very weak effects on aggression (defined very broadly, ranging from approximately 0–4 percent; Anderson 2004; Ferguson 2007; Ferguson and Kilburn, 2009; Mitrofan, Paul, and Spencer, 2009; Sherry 2007). Data from youth-violence statistics reveal that the explosion in popularity of video games, including those with violence, has clearly not produced a youth-violence epidemic, as youth violence has declined precipitously during the same period (I am careful to note that this should not be taken to imply that video games have *caused* this reduction in youth violence; this data is merely correlational). It has become fashionable for some media-violence scholars to ignore this youth-violence data. It doesn't matter, the argument goes, because violence is caused by so many different factors that video games could still be having a negative effect masked by numerous other, yet unexplained, positive factors. This argument fails on two counts. First, it is essentially a concession to what critics have been arguing: that video-game violence effects are so trivial that they are unimportant in the grand scheme of things. If this is true, then social scientists should be taking greater care to ease the fears of parents and policymakers, not inducing greater amounts of unnecessary fear. Second and perhaps more important, this argument brings the hypothesis about media violence and video-game violence to an unfalsifiable level. In other words, the theory need never actually match with real-life data, and such data can be simply ignored or wished away. It is forgotten that many of the same researchers happily referred to violent-crime data while it was *increasing* (e.g., Bushman and Anderson 2001; Centerwall 1989); now when the data is unfavorable, it is unimportant. Yet an unfalsifiable theory, one immune to data, is a nonscientific theory. Could we imagine worrying about smoking if lung cancer rates *declined* among smokers? This is how far the media-violence hypothesis has fallen. A perfectly reasonable empirical question has largely been disproven by real-world data. The only place for it to go is pseudoscience. □

References

Anderson, C. 2004. An update on the effects of playing violent video games. *Journal of Adolescence* 27(1): 113–122.

Anderson, C., and K. Dill. 2000. Video games and aggressive thoughts, feelings and behavior in the laboratory and in life. *Journal of Personality and Social Psychology* 78(4): 772–790.

Anderson, C., A. Sakamoto, D. Gentile, N. Ihori, A. Shibuya, S. Yukawa, M. Naito, and K. Kobayashi. 2008. Longitudinal effects of violent video games on aggression in Japan and the United States. *Pediatrics* 122(5): e1067–e1072. Available online at http://pediatrics.aappublications.org/cgi/content/full/122/5/e1067.

Bem, D., and C. Honorton. 1994. Does psi exist? Replicable evidence for an anomalous process of information transfer. *Psychological Bulletin* 115(1): 4–18.

Block, J., and B. Crain. 2007. Omissions and errors in 'Media violence and the American public.' *American Psychologist* 62(3): 252–253.

Bushman, B., and C. Anderson. 2002. Violent video games and hostile expectations: A test of the generalized aggression model. *Personality and Social Psychology Bulletin* 28(12): 1679–1686.

———. 2001. Media violence and the American public. *American Psychologist* 56(6–7): 477–489.

Bushman, B. J., R. Baumeister, and C. Phillips. 2001. Do people aggress to improve their mood? Catharsis beliefs, affect regulation opportunity, and aggressive responding. *Journal of Personality and Social Psychology* 81(1): 17–32.

Centerwall, B. 1989. Exposure to television as a risk factor for violence. *American Journal of Epidemiology* 129(4): 643–652.

Cook, D. 2000. Testimony of the American Academy of Pediatrics on media violence before the U.S. Senate Commerce Committee. Elk Grove Village, IL: American Academy of Pediatrics. Available online at www.aap.org/advocacy/releases/mediaviolencetestimony.pdf.

Ferguson, C.J. 2009. Is psychological research really as good as medical research? Effect size comparisons between psychology and medicine. *Review of General Psychology* 13(2): 130–136.

———. 2007. Evidence for publication bias in video game violence effects literature: A meta-analytic review. *Aggression and Violent Behavior* 12(4): 470–482.

Ferguson, C.J., and J. Kilburn. 2009. The Public health risks of media violence: A meta-analytic review. *Journal of Pediatrics* 154(5): 759–763.

Ferguson, C.J., and S.M. Rueda. (in press). The Hitman study: Violent video game exposure effects on aggressive behavior, hostile feelings and depression. *European Psychologist*.

Ferguson, C. J., S.M. Rueda, A. Cruz, D. Ferguson, S. Fritz, and S. Smith. 2008. Violent video games and aggression: Causal relationship or byproduct of family violence and intrinsic violence motivation? Criminal Justice and Behavior 35(3): 311–332.

Freedman, J. 2002. *Media Violence and Its Effect on Aggression: Assessing the Scientific Evidence*. Toronto: University of Toronto Press.

Gauntlett, D. 1995. *Moving Experiences: Understanding Television's Influences and Effects*. Luton: John Libbey.

Gentile, D. 2009. Pathological video game use among youths aged 8 to 18: A national study. *Psychological Science* 20(5): 594–602.

Gentile, D., M. Seleem, and C. Anderson. 2007. Public policy and the effects of media violence on children. *Social Issues and Policy Review* 1(1): 15–61.

Grimes, T., J. Anderson, and L. Bergen. 2008. *Media Violence and Aggression: Science and Ideology*. Thousand Oaks, CA: Sage.

Markey, P.M., and K. Scherer. 2009. An examination of psychoticism and motion capture controls as moderators of the effects of violent video games. *Computers in Human Behavior* 25(2): 407–411.

McGraw, P. 2007. Virginia Tech massacre: Interview with Larry King. Available online at http://transcripts.cnn.com/TRANSCRIPTS/0704/16/lkl.01.html.

Mitrofan, O., M. Paul, and N. Spencer. 2009. Is aggression in children with behavioural and emotional difficulties associated with television viewing and video game playing? A systematic review. *Child: Care, Health and Development* 35(1): 5–15.

Olson, C. 2004. Media violence research and youth violence data: Why do they conflict? *Academic Psychiatry* 28(2): 144–150.

van Schie, E.G.M., and O. Wiegman. 1997. Children and videogames: Leisure activities, aggression, social integration, and school performance. *Journal of Applied Social Psychology* 27(13): 1175–1194.

Sherry, J. 2007. Violent video games and aggression: Why can't we find links? In R. Preiss, B. Gayle, N. Burrell, M. Allen, and J. Bryant, (Eds.) *Mass Media Effects Research: Advances Through Meta-analysis* (pp 231–248); Mahwah, NJ: L. Erlbaum.

Thompson, J. 2007. Massacre at Virginia Tech: Interview with MSNBC. Available online at www.msnbc.msn.com/id/18220228/.

Thompson, K., and K. Haninger. 2001. Violence in E-rated video games. *Journal of the American Medical Association* 286(5):591–598.

United States Secret Service and United States Department of Education. 2002. The final report and findings of the Safe School Initiative: Implications for the prevention of school attacks in the United States. Available online at www.secretservice.gov/ntac/ssi_final_report.pdf.

Woolley, J., and J. Van Reet. 2006. Effects of context on judgments concerning the reality status of novel entities. *Child Development* 77(6): 1778–1793.

NDE Experiment: Ethical Concerns

Anecdotal reports of people having paranormal perceptions during near-death experiences are widespread, and it has been suggested that such claims could be tested scientifically. But is it ethical to research this topic on unresponsive and nonconsenting patients, as a new study purports to do?

SEBASTIAN DIEGUEZ

> *I do not think one has to apologize for scientific belief if one does not accept the ideas of spirits wandering around the emergency room.*—R.S. Blacher, 1980, letter to *Journal of the American Medical Association,* 244: 30.

You find yourself in a hospital bed, having recovered your senses just a moment ago. Your memories are confused, but you recall now that there was something about a tremendous pain in your chest, people bustling around you, and an ambulance roaring through the streets. Then nothing. A nurse tells you with a smile that you luckily survived a cardiac arrest. You've been brought to the hospital just in time for successful CPR to take place, and the doctors are now very optimistic about your recovery.

Thankfully, you won't suffer from any irreversible brain damage. You feel relieved, but at the same time hundreds of thoughts rush through your mind. Now a doctor comes to see you. He tells you that he is "conducting a study into the experiences people have when they are in a deep coma"[1] and asks whether you would like to participate in that study. Of course, before signing the consent form, you ask for more details. Only now do you realize that what this doctor really wants to know is whether you had one of those "NDEs" you heard about years ago on TV. He further wants to know if you somehow managed to perceive a special target that he took care to hide beforehand on a suspended board facing the ceiling. The following dialogue ensues:

> Patient: What do you mean did I "see" a target? How on earth could I have perceived this thing, when not only I was nearly dying at the time, but by your own account the picture was turned the wrong way out? Is this some kind of a joke?
> Doctor: Not at all. You see, some people who nearly die, just like you, nonetheless come back to tell the most amazing things. They explain that they went out of their body and were able to look down at the whole scene, including their own body! So we are currently testing whether this is actually true, and that is why I'm asking you whether or not you have seen the target.
> P: Wait, you believe that stuff? Well, never mind. . . . But why are you asking for my consent *now*, hasn't your silly little experiment *already* taken place? Why didn't anyone ask me *before* whether I'd like to have anything to do with this nonsense?
> D: Well, you see, you were unconscious at the time, and . . .
> P: Yes, that's *exactly* my point! I was *unconscious*! This is appalling! Does this hospital actually allow you to do this?
> D: Of course. This is part of an international study. Now tell me sir, did you see the Light by any chance?

The preceding scenario is not pure fiction. Such a surreal conversation could very well be taking place right now in various hospitals around the world, where a widely publicized large-scale study on near-death experiences (NDEs) has been recently launched. The AWARE study (AWAreness during REsuscitation[2]) purports to "use the latest technologies to study the brain and consciousness during cardiac arrest" and at the same time test "the validity of out of body experiences and claims of being able to see and hear during cardiac arrest through the use of randomly generated hidden images that are not visible unless viewed from specific vantage points above."[3] The project is being led by Dr. Sam Parnia (University of Southampton) and is said to involve "more than twenty-five major medical centers throughout Europe, Canada, and the United States." Because NDEs can occur in many different circumstances (many of them not even "near-death"), prospective studies in homogeneous populations are important to gain a better understanding of such experiences. In this regard, cardiac arrest offers a relatively standardized and workable model of what each of us might ultimately experience at our last breath, as well as an ideal population to know more about NDEs and their physiological correlates.[4] As it has been found that only around 6–12 percent of cardiac arrest survivors remember anything like an NDE from their ordeal,[5] it is clear that only a small number of such patients can be studied in a particular setting and in any reasonable amount of time. Moreover, it is worth remembering that cardiac arrest survivors regrettably represent only a small minority of cardiac arrest sufferers, as most of these patients simply *cannot* be resuscitated. At first glance, this is why the AWARE project seems like a very promising study, as it will be conducted simultaneously in several medical centers, will involve many investigators from different fields and will last for about three years. Parnia and his colleagues estimate that around 15,000 patients will be included, of which a conservative estimate of 1,500 might survive and about 150 might report some kind of memories resembling an NDE. (Moreover, according to some estimates, only about 24 percent of patients with NDE will report some kind of out-of-body experience [OBE].)[6]

This leaves us with around forty patients out of 15,000 that could possibly provide data concerning alleged out-of-body perceptions. As this would constitute the largest series of OBEs ever collected, it seems that this is the kind of investigation that should put aside conflicts between skeptics and believers and shed new light on a fascinating, albeit controversial, topic.

Prominent skeptics of NDEs indeed seem to think so. For instance, Susan Blackmore wrote: "If Parnia does the experiments properly, and his patients really can see those images, then I will change my mind about the paranormal. I don't think it's going to happen but I do think it's worth him making the attempt."[7] And Chris French, quoted by journalist Bryan Appleyard in the *Sunday Times* commented, "This is definitely a legitimate scientific inquiry. . . . Refereed proposals of this kind have my full support. There's no doubt that people have these experiences, and there is something of great psychological interest to be explained here."[8]

I don't take issue with French's last sentence. NDEs *are* interesting. But should skeptics unquestioningly embrace the AWARE study as scientifically legitimate? This "openness" is not entirely new either. Philosopher Keith Augustine, author of a thorough three-part demolition of "survivalist" approaches to NDEs, has also expressed the desirability of such research:

> The cutting edge of near-death research lies in controlled tests of veridical paranormal perception during the out-of-body phase of those NDEs that include OBEs. The detection of remote visual targets during out-of-body NDEs has the potential to provide decisive evidence of consciousness functioning independently of the body, conceivably answering the survival question once and for all. . . . It is imperative that further tar-

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get identification experiments be simultaneously carried out at multiple hospitals over a period of several years.[9]

What is striking about these comments is the way they seem to entirely disregard the subjects of such a study: the patients. If *their* perspective was taken into account, it seems that such studies should be decried as unethical. I will explain why this is so and then respond to some expected objections. Basically, my problem with the ethical value of this study is as follows: the subjects will not be able to give their informed consent at the moment of the experiment, and the rationale of the experiment is based on the paranormal. Combined, these facts make the AWARE study ethically bankrupt and thus unacceptable.

Informed Consent?

Let's look first at informed consent. Obtaining informed consent is a necessary requirement for any scientific study involving human subjects. This means that individuals have a basic right not to be enrolled in scientific studies against their will or without being so informed. If they agree to participate in a study, they should be thoroughly informed about its goals, details, and risks. Although the extent to which this requirement sometimes needlessly hinders or slows down valuable and harmless behavioral research and the situations in which it can reasonably be modulated, adapted, delegated, postponed, or even waived are a matter of debate between scientists, institutional boards, ethical committees, and the general public,[10] there is nevertheless widespread agreement that informed consent cannot be treated lightly. It seems obvious that informed consent *cannot* be obtained in research projects involving unresponsive patients, and the AWARE project, as I understand it, will specifically involve many such patients in need of emergency care. Indeed, by definition, a scientific project associated with procedures of *resuscitation* cannot reasonably depend on the informed consent of the subjects themselves. As Parnia et al.'s study will include 15,000 patients in three years, they cannot possibly select only those who could provide consent for their study *before* they arrive in the emergency ward or even *while* they are there being resuscitated. In such cases, as research in the area of emergency medicine is legitimate and *must* be done, other standards apply. These standards differ across countries but basically demand that a number of criteria be met to obtain an exception from (or waiver of) informed consent.[11] It is my impression that behind such criteria, even if this is not always stated explicitly, lies the obvious assumption that the research must actually be *worth* conducting. This means that it should be promising or at least based on a sound, scientific rationale.[12]

So let's take a close look at what the AWARE study is about. The most publicized aspect of this project is clearly investigating the possibility of genuine disembodied perceptions (i.e., from an "out-of-body" visual perspective) using pre-installed "hidden targets" in the emergency ward. What exactly is the logic behind this? Although this is rarely stated explicitly in the NDE literature, it can be put this way: NDEs, especially in cardiac arrest sufferers, provide a kind of super-optimal circumstance to test the veracity of the OBE. Specifically, the NDE provides a unique chance to test for paranormal perception while the brain is not functioning correctly or even not functioning *at all*. Let me emphasize this point: the idea behind this kind of NDE research is not only to demonstrate the "veridicality" of OBE perceptions but to further associate them, or rather *dissociate* them, from particular states of brain activity. Then, not only would NDEs provide evidence for the paranormal but such evidence would come—as a bonus—in the context of severe neurological impairment, thus implying that the mind is really more than brain function. But why should one even consider such an idea in the first place? Well, the only reason consists of taking at face value the phenomenology of some NDEs, or rather the verbal reports of some patients who describe how they were "out of their body" and could look down at the scene. The AWARE study is thus based on scattered anecdotes from popular literature that lead some researchers to ask whether paranormal perceptions would somehow occur while or even because the brain is shut down. And this, of course, can only be tested in human subjects at great risk of dying or suffering irreversible brain damage. So the question raised by the AWARE study is really this: should unresponsive and dying patients become the ideal subject pool to investigate the possibility that the mind can be sustained without a functional brain merely because anecdotes suggest so to some researchers? I say no; this should be avoided out of respect for the patients, their families, and the image of medical science in general.

Arguments for Research

Readers might wonder if I'm overreacting, and there are several predictable rejoinders to my objection.

First, one might argue that the AWARE study could not have been launched and announced to the entire world if it had not already received approval from relevant local review boards. Indeed, this seems so obvious that I take it as a given. My point in this article is not to charge anyone with not having done the appropriate paperwork; I take issue with the very *approval* of such a study: I simply deplore the use in parapsychological studies of patients with acute cardiac arrest who cannot give their consent.

Still, one might argue, even granting that the experiment is useless and bound to fail, is it not at least worth a try? If it does not interfere with CPR and is entirely harmless, why not do it?[13] I can only repeat that having subjects report about the content of a target hidden from their senses is nothing more than a parapsychological experiment. In any medical research, the benefits must outweigh the risks. Suspended boards do not involve any risk at all, anyone will grant that, but as a parapsychological investigation, the therapeutic benefits (and more generally, the scientific benefits[14]) are also inexistent. So why even *do* a zero-risk and zero-benefit study, especially on unresponsive patients? Research with patients should be foremost about helping patients. No clinical research, for example, should purport to singlehandedly tumble down the current "mainstream" materialistic paradigm of brain-mind interactions or any other "paradigm" for that matter. "Hoping for the

jackpot"[15] is simply not how science works. Indeed, if the null-hypothesis of the AWARE study is that perceiving a hidden target at the moment of death is impossible, then imagine how many more studies of the kind could be done and consider whether this is how progress is made in science. Think about it this way: how would the logic behind the AWARE study be different than that of *weighing* the bodies of cardiac arrest patients in order to investigate whether the departure of the soul induces a loss in body mass, however small? In a study involving 15,000 patients, one could compare three groups: patients who died, patients who survived and had an NDE, patients who survived and had no NDE. If the soul leaves the body during NDEs and at death, and if this decreases the weight of the physical body, such a large-scale multicentric study would definitely demonstrate it. After all, similar studies have been conducted in the past, which sometimes yielded intriguing results[16] (see the "Soul Scales" *Skeptical Inquiree* column in the January/February 2007 SI). Here's the dilemma: if one believes that the AWARE study is ethical, one would have to agree with one of the two following claims. 1) Weighing dying patients without their previous consent in order to study whether the departure of the soul can be measured is a perfectly ethical thing to do in the name of science; 2) Comparing such an experiment to the study of paranormal NDE perceptions (even using the very same population) is inadequate or unfair. I can't think of any convincing defense for each claim, therefore I rest my case that minimal risk is not a sufficient criterion to conduct research without consent.

Neither does it matter that surviving patients might provide informed consent during recovery. What matters is that at this stage the patient has already been involved in a parapsychological experiment without his consent. Unless a patient reports his memories spontaneously, the interview will be the first moment when any NDE (let alone any "veridical perceptions") will be reported. But this interview is *not* when the experiment starts. The experiment starts with the very presence, the *premeditated* presence, of a "hidden target" in the emergency ward. In such an experiment the independent variable is the pre-selected target, and the dependent variable is the response (or lack thereof) of the patient about that specific target. Therefore, the experiment takes place while the patient is unconscious and unable to provide his consent to be part of the study. This is completely unlike the more typical situation where a patient may spontaneously report having observed some event during an apparent state of unconsciousness. As a *planned* experiment involving specific hypotheses and objectives, special materials, dedicated staff, and so forth, the AWARE study has to respond to the same requirements as any other research on cardiac arrest resuscitation, and I claim that it fails to do so. An exception from informed consent is a very precious commodity for medical scientists. It must be restricted to promising and necessary projects, and quite frankly the contribution of parapsychology to medical science has been virtually nil.

On a related note, I'd be curious to know what exactly will be communicated to patients when their consent is asked for in the AWARE study in order to avoid any misunderstanding about the exact nature of the study. It would be interesting to know whether the researchers will explicitly tell the patients or their patients' relatives that part of the research is in the field of parapsychology. If nothing else, patients might be interested to know that they have been involved in a study testing whether brain function is necessary to sustain the mind, whereas modern resuscitation is precisely all about minimizing brain damage. Some leaders and advisors of the AWARE project indeed have explicitly argued that the mind survives brain damage. Those researchers have repeatedly written pro-paranormal accounts and have expressed their distrust of what they often dismissively call "mainstream" science, putting themselves on the fringe of the scientific community. Perhaps patients should be entitled to know this, as it is *their* brains that are at stake during the study. More generally, it is easy to perceive that there is much more behind this study than a simple wish to "settle a debate." The plan is to convey foremost the idea that there *is* a debate or something "to settle" in the first place, much like intelligent design proponents would like to "teach the controversy,"[17] with about the same level of intellectual sophistication. The problem here is that patients are being involved in a battle where they don't belong.[18]

Finally, there may be accusations of censorship or narrow-mindedness. Do I want to suppress research? Am I the great inquisitor deciding what is good and bad research? Am I afraid that my (materialistic) worldview might be shattered by NDE research? None of this matters. As far as the AWARE study is concerned, the issue remains an ethical one for skeptics and believers alike. There is always a power issue when doctors and scientists want to test something that involves the participation of patients, even more so with unresponsive patients. It is not simply that I personally think the AWARE study is useless and dubious. Patients should have a right to simply refuse to be part of it, since the experiment would not solve any medical problem or help improve some currently unsatisfying therapeutic. And yes, open-mindedness and curiosity are good things, but is open-mindedness a sufficient reason to use unwilling and unresponsive cardiac arrest victims in a far-fetched test of paranormal abilities? I don't think so. Just because anecdotal reports of paranormal perceptions during NDEs are associated in folklore, religion, and pop-culture to the metaphysical anxieties of the afterlife doesn't give them *de facto* scientific legitimacy. □

Notes

1. Parnia, Sam. 2008. *What Happens When We Die?* London: Hay House. p. 97.

2. AWARE press release is available online at www.mindbodysymposium.com/Human-Consciousness-Project/the-Aware-study.html and www.mindbodysymposium.com/press-articles.html.

3. However, it seems that these "hidden images" will not be "randomly generated" after all but are simply pre-installed pictures on a board. There are allegedly about 750 of them already scattered across different hospital areas. It is not clear if these pictures will be regularly changed, who is blinded to their content and who is not, when they will be removed, and so forth. Examples include a baby or a pink dog. (See press conferences on the AWARE study at http://fr.youtube.com/watch?v=laBjuO7Lyo0&feature=related and www.mindbodysymposium.com/Beyond-the-Mind-Body-Problem/articles-in-the-press.html#.)

4. I will assume that most readers know what an NDE is and will thus not delve into the vexing issue of how it should be defined exactly (which I claim elsewhere is one of the main problems of NDE research, see Dieguez,

Sebastian 2008. NDE redux. *Skeptic* 14 (3): 42-43).

5. Blanke, Olaf, and S. Dieguez. 2009. Leaving body and life behind: Out-of-body and near-death experience. In Laureys, S. (ed.). *The Neurology of Consciousness.* Amsterdam: Elsevier. pp. 303–325.

6. van Lommel, Pim, et al. 2001. Near-death experiences in survivors of cardiac arrest: A prospective study in the Netherlands. *Lancet* 358: 2039–2045. In another study, Parnia found that four out of sixty-three studied cardiac arrest survivors reported an NDE, but none involved an OBE. The OBE, however, is very loosely defined in NDE research and does not necessarily entail visual perception of one's surroundings and own body.

7. Blackmore, Susan. 2008. Back from the grave: Research on near-death experiences is unlikely to find evidence that human consciousness can survive without a brain. Available online at www.guardian.co.uk/commentisfree/2008/sep/19/health.mentalhealth.

8. Appleyard, Bryan. 2008. The living dead: The afterlife has long been an article of religious faith. And now scientists are finally putting the idea to the test. *Sunday Times*, December 14. Available online at www.timesonline.co.uk/tol/comment/faith/article5324234.ece.

9. Augustine, Keith. 2007. Does paranormal perception occur in near-death experiences? *Journal of Near-Death Studies* 25 (4): 203–236. pp. 230; 233.

10. For a general discussion about the problems behavioral scientists face with such regulations, see S. Kim, P. Ubel, R. De Vries. 2009. Pruning the regulatory tree. *Nature* 457 (7229): 534–535.

11. For an overview of the heavy regulations and numerous criteria involved in research in emergency medicine, see V.N. Mosesso and D.C. Cone. 2005. Using the exception from informed consent regulations in research. *Academic Emergency Medicine* 12: 1031–1039.

12. Watters, D., M.R. Sayre, R. Silbergleit. 2005. Research conditions that qualify for emergency exception from informed consent. *Academic Emergency Medicine* 12: 1040–1044.

13. A colleague of mine quipped: "Why should you care? The patients won't even *see* these suspended boards. . . ." I fully agree, but ethics in medical research obviously cannot be based on the *outcome* of the study to be evaluated.

14. The AWARE study seems to suffer from certain limits that make it basically unable to solve the "debate" it claims to investigate either way. Notably, the use of pre-installed fixed targets instead of randomly alternating ones makes it impossible to correlate any perception (should they happen) with any particular brain-state.

15. Blackmore, Susan. 1987. Parapsychology's choice (commentary on Rao and Palmer, and Alcock). *Behavioral and Brain Sciences* 10 (4): 572–573.

16. See Roach, Mary. 2005. *Spook.* London: Norton. chap. 3.

17. See www.newscientist.com/article/mg20026793.000-creationists-declare-war-over-the-brain.html; Clark, Andy. In press. There is no nonmaterialistic neuroscience in *Cortex*; and Farah, M., and N. Murphy. 2009. Neuroscience and the soul. *Science* 323: 1168.

18. It is my opinion that the presence of militant anti-materialists in the emergency ward should be, to skeptics and rationalists, an even more appalling prospect than creationists in the classroom.

Comments

Christopher C. French: I think this article raises an interesting issue, but ultimately I find the arguments unconvincing for a number of reasons, a few of which I will briefly summarize here.

First, the argument rests on the assumption that the outcome is already known, i.e., none of the patients will correctly describe the hidden target. While it is clear from my own writings on this topic (e.g., French 2005, in press) that I think this is almost certainly true, I think it is important for skeptics to acknowledge that they just might be wrong.

Second, a reasonable case can be made that there is a risk attached to *not* asking such patients about any unusual experiences they may have had during their cardiac arrest. Many patients report that they find it very stressful trying to talk to people about their NDEs, worried that others will think they are "crazy." There is some value to patients being reassured that such experiences are fairly common and are not associated with mental illness.

Third, this line of argument, if taken to its logical conclusion, would seem to have implications for other lines of research involving autobiographical memory of all kinds. For example, memory of dramatic news events (so-called "flashbulb memories") have been much studied by psychologists. Is it really the case that a psychologist studying such memories has actually started the experiment from the moment that the dramatic news event in question occurs as opposed to the moment she questions her participants about their memory of the event? I would say not.

References

French, C. C. 2005. Near-death experiences in cardiac arrest survivors. *Progress in Brain Research* 150, 351–367.

———. (in press). Near-death experiences and the brain. In C. Murray (ed.). *Psychological Scientific Perspectives on Out-of-Body and Near-Death Experiences.* New York: Nova Science Publishers.

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Susan Blackmore: I stand by my comment that "If Parnia does the experiments properly, and his patients really can see those images, then I will change my mind about the paranormal. I don't think it's going to happen but I do think it's worth him making the attempt."

Dieguez claims (without giving evidence) that the targets are not kept blind or randomized properly. If he's right the experiments are worthless, but let us suppose they are done properly. Anecdotal reports of veridical NDEs may be "unconvincing" to Dieguez, but they convince many people. So if experiments can show that paranormal claims are unverifiable (which I expect they will) and can also explain why people have these experiences even if nothing leaves the body, then this would greatly improve people's understanding of death and dying. Alternatively, if experiments show that people really do see hidden targets (which I do not expect but could conceivably happen), then this would be a dramatic challenge to most of science. The comparison with the intelligent design debate is false. ID proponents do not propose viable experiments that could potentially provide such a challenge.

As for ethics—yes, Dieguez is "overreacting a little bit." The targets cannot harm patients (unless you believe in the paranormal). The critical point is when the doctor asks whether the patients would like to talk about their experiences. As long as they are given the chance to talk (as many like to do) or to decline to say anything at all then I see no serious ethical problem.

I want these experiments to be done. All those millions of people out there who proclaim they "know" they have a spirit that will survive death and "know" that consciousness has powers beyond the body deserve to have their claims tested.

Susan Blackmore is author of Dying to Live: Science and the Near-Death Experience, The Meme Machine, *and* Consciousness: An Introduction.

Does Subliminal Persuasion Work?

It Depends on Your Motivation and Awareness

Recent psychological research provides more answers about why and when subliminal information can influence people's preferences and behaviors.

BRANDON RANDOLPH-SENG and ROBERT D. MATHER

We like to believe that we do the things we do because we consciously decide to do them. Recent scientific research in psychology, however, demonstrates instances when our actions can be caused by things of which we are not aware (Wegner 2005). For example, imagine that you just completed a computerized driving test. You attempt to notify the attendant that you have completed the test, but she ignores you while she talks on her cell phone about her new shoes. Much to the attendant's dissatisfaction, you choose to interrupt and give her your information. Pausing to explain your unusual forthrightness, you may conclude that your actions reflect your

annoyance and desire to get home before *American Idol* starts. Although such an explanation could reasonably account for your own behavior, you find out later that your directness with the attendant was instead caused by words related to "rude" being flashed at you on the computer screen so fast that you did not notice them while you took the driving test.

Our Cognitive Architecture

Curious as this may sound, this is the exact effect reported by Bargh, Chen, and Burrows (1996) in one of the top journals in social psychology. Furthermore, similar effects have been replicated dozens of times since the publication of the Bargh et al. paper. For example, relative to a control group, decreased memory (Dijksterhuis, Bargh, and Miedema 2000), increased honesty (Randolph-Seng and Nielsen 2007), and increased scores on a general-knowledge test (Dijksterhuis et al. 1998) have all been found following subliminal flashes of elderly (e.g., *old*, *gray*, *wrinkle*), religious, and academic words, respectively (for a recent review see Andersen, Moskowitz, Blair, and Nosek 2007; Mather and Romo 2007).

As it turns out, these findings are not as remarkable as they seem; instead they are simply a consequence of the way we are cognitively built. In order to do just about anything (e.g., write, drive, walk), our actions must at times be separated from our conscious thoughts about those actions. This separation is necessary simply because we can consciously think about only one thing at a time (Macrae and Johnston 1998). If you don't believe that a separation exists between your conscious thoughts and your actions, stop reading right now and get up and walk around while consciously thinking about every action your body must engage in as you walk. Most likely you will walk very slowly and may even stumble. However, if you don't consciously think about every action your body must perform to move, you not only don't stop moving, you actually are able to move faster (e.g., run without falling down). So how does our body know how to move without the involvement of conscious thought? Nonconscious processes are involved.

It is not only our own actions that can operate separately from our thoughts; even our thoughts themselves show a similar separation because of our inability to consciously think about more than one thing at a time. Our use of language is a great example. Most often when we think about speaking or writing we are only aware of the product (e.g., what we actually say) and not the process (e.g., how to combine the words into something that can be understood by others; see Nisbett and Wilson 1977). How is it possible that something as dynamic and complex as language can seem to magically appear out of nowhere (Bargh 2006)? The answer is that we simply are not aware of the thinking that goes on before we speak. If we were aware of the process, our conscious mind would be so bogged down that it would become difficult to speak or even write.

In fact, recent physiological research provides evidence that information we cannot consciously see can influence neurological brain structures (Dehaene and Naccache 2006), suggesting physiological differences between conscious and nonconscious thinking (Satpute and Lieberman 2006). For example, the amygdala is uniquely involved in processing emotion in nonconscious social stimuli (Phelps 2005), and the inferior temporal cortex is uniquely involved in nonconscious matches of currently perceived stimuli to previously learned patterns that already exist in memory (Satpute and Lieberman 2006).

Subliminal Procedures

How is the way we are cognitively built related to being persuaded to think, feel, and act according to words being presented so fast that they cannot be seen? In the science of psychology, subliminal techniques—defined as the presentation of stimuli, such as words or images, in ways that do not allow for conscious awareness (e.g., too faint or fast)—are usually employed to better understand how things like language and action are possible (Dijksterhuis, Aarts, and Smith 2005). Ironically enough, considering the rocky history of subliminal research (see Pratkanis 1992), subliminal procedures are now invaluable tools in the science of psychology because they allow experimenters to discover and manipulate thinking processes that would otherwise be too uncontrolled and fleeting to study (Bargh and Chartrand 2000). For example, researchers have subliminally presented people with photographs of African Americans and then immediately measured how they judge others. Procedures like this allow scientists to understand how stereotypes are associated in the mind without the need to rely on a person's own self-report that at worst lacks access to the underlying thought process involved and at best is censored based on "political correctness" (see Devine 1989). A side benefit to the basic research done in psychology using subliminal procedures is that reliable scientific theories and methods can be applied to one the most controversial areas of marketing research—subliminal persuasion.

Persuasion

The topic of subliminal persuasion is not new to the readers of the SKEPTICAL INQUIRER (see Epley, Savitsky, and Kachelski 1999; Moore 1992; Pratkanis 1992). Based on available research at the time, Pratkanis (1992) agreed that subliminal perception (information from the world that cannot be consciously sensed but still registers in our minds) is an established phenomenon; yet subliminal persuasion (the notion that subliminal perception can influence thinking, feeling, and acting) is a myth. Epley et al. (1999) reviewed more recent research that had not been published by 1992 when Pratkanis wrote his article, which provided clearer evidence that subliminal persuasion in conjunction with subliminal perception is not only possible but reliable in a laboratory setting. In the ten years since Epley et al. published their 1999 article, research using subliminal techniques has continued to advance and now regularly

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appears in some of the top research journals in psychology. Nevertheless, controversy about applications of subliminal persuasion to the real world (i.e., consumer context) remains.

In part, this controversy has emerged because of the lack of evidence that subliminal information can influence consumer behavior (Pratkanis and Aronson 2001). Nevertheless, scientific research has persisted, and two important factors in determining whether or not subliminal persuasion can occur are beginning to emerge: motivation and awareness. Specifically, a person's current motivations at the time of being exposed to subliminal information and a person's awareness of being exposed to subliminal information will determine in part whether subliminal persuasion is possible (see Bargh 2002; Dijksterhuis, Smith, van Baaren, and Wigboldus 2005).

Motivation

When psychologists use the word *motivation* they are usually referring to some type of movement toward a desired outcome (Vallacher and Wegner 1987). A good example would be goal pursuit. If one has a goal to satisfy one's hunger, then one's feelings, thoughts, and actions will usually reflect this desire. Nonetheless, how does one choose which way to meet one's goals, wants, and desires? For example, there are a number of ways to reduce hunger, but what determines the chosen method (e.g., I will make a banana-mayo sandwich)? Excluding obvious restrictions placed on our choices by the environment or past choices (e.g., all I have is bananas, mayo, and bread in the fridge), part of the answer rests once again on how humans are cognitively built. Given the complex world in which we live, it would be difficult at best to successfully pursue many of our goals, wants, and desires if we had to rely solely on our conscious mind, which can think of only one thing at a time.

Fortunately, even our motivations can be pursued without the need of conscious involvement and therefore can be manipulated by subliminal techniques (for a review of the dozens of studies in this area see Dijksterhuis, Chartrand, and Aarts 2007). For example, people subliminally presented with photographs of Coke cans and the word "thirsty" rate themselves as thirstier than those not exposed to any subliminal presentations (Cooper and Cooper 2002), and people subliminally presented with either "drink" or "cola" simply drink more liquid compared to those who did not receive the presentations (see Dijksterhuis et al. 2005). In the studies just reported, subliminal presentations increased motivations of thirst, yet, consistent with past research (e.g., Beatty and Hawkins 1989), the subliminal presentations did not influence how people specifically quenched that thirst (e.g., brand choice).

This pattern of results is problematic if claims of subliminal persuasion are to be substantiated; for persuasion (subliminal or not) is really about influencing specific choices, not general motivations. Nevertheless, recent research has found that general motivations are important to consider when investigating whether subliminal influences on specific choices (i.e., brand choice) are possible. For example, imagine the following scenario: You arrive at a movie theater just in time to catch the last half of the previews. Unknown to you, the words *Drink Coke*

have been subliminally presented during the previews. How will this subliminal message influence your motivation to get out of your seat and walk to the concession stand to get a Coke? If you put yourself in that situation, you may conclude that it will depend on what your current motivations are at the time. Are you thirsty, hungry, or neither? Do you want to see the rest of the previews? Do you mind missing the beginning of the movie? Do you have money to spend on a drink? At any one moment, we have a number of potential motivations that are all competing to be acted upon, and we are not consciously aware of many of them. We can act upon only one of these motivations at a time, so which one is likely to "win"? The winner will probably be the motivation that most easily comes to our conscious mind because of the priority placed upon that choice by our likely general motivations in the situation (e.g., staying in my seat to see the movie; see Macrae and Johnston 1998).

People subliminally presented with either "drink" or "cola" simply drink more liquid compared to those who did not receive the presentations.

While showing the difficulty of using subliminal persuasion to influence specific choices where people's motivations cannot be controlled (i.e., outside of a laboratory setting), this scenario also suggests how subliminal persuasion can be successful. Specifically, if you could align someone's preexisting general motivations (e.g., thirsty and wanting to buy a drink) with a subliminal message ("Drink Coke"), you may be able to actually influence what brand of drink they choose. This is exactly what researchers in psychology have found. If people are already thirsty, being subliminally presented with thirst-related words (e.g., dry) causes them to be more easily persuaded—relative to thirsty people subliminally presented with neutral words—by an ad for a sports drink that emphasized its thirst-quenching characteristics (like Super-Quencher) than a sports drink that does not (like PowerPro; Strahan, Spencer, and Zanna 2002). Further, actually subliminally presenting a brand choice (such as Lipton Iced Tea) increases the chances that people will choose that drink over other brands offered (such as Coca Cola and Spa Rood), relative to a control, but only if they are already thirsty, generally consider that brand to be thirst-quenching, and do not habitually consume the brand being subliminally presented (Karremans, Stroebe, and Claus 2006).

Although the limited evidence is supportive of the importance of a person's motivation at the time of being subliminally presented with a stimulus, more research in the area is needed. One situation in which current motivations may have differing influences on subliminal persuasion is when someone is aware beforehand that they will be subliminally presented with a stimulus.

Awareness

Awareness in this context simply refers to a person's knowledge of being exposed to information. One common counter by critics of subliminal persuasion is that research investigating the effectiveness of subliminal self-help tapes shows none of the claimed effects (e.g., Greenwald, Spangenberg, Pratkanis, and Eskenazi 1991). The problem with this research is that as soon as you tell people that they are being exposed to subliminal information (even if it is not the correct information) their cognitive processing of information from the environment is altered. For example, psychological research over the past twenty-five years repeatedly demonstrates that if a person becomes aware (or thinks they are aware) of potential influences from subtle stimuli on their thoughts, feelings, or behaviors, the normal influences of the stimuli changes, reverses, or just disappears (for an overview of this research area see Glaser and Kihlstrom 2005). That is why one essential characteristic of subliminal research is that the participants must show no awareness of the subliminal information (Bargh and Chartrand 2000).

A great example of the influence of awareness on subliminal primes comes from an experiment by Dijksterhuis, Bargh, and Miedema (2000). As mentioned in the introduction, typically research has found that if you subliminally expose (or "prime") people with words related to old age (e.g., *old*, *gray*, *wrinkle*), it will temporarily have an effect on their behavior, such as cause them to remember less. To see what would happen if people were told they were going to receive subliminally presented "elderly" words that may negatively influence their memory, Dijksterhuis and colleagues put people into four different experimental conditions. In two conditions people were not told they were being subliminally presented with the words and in the other two conditions they were told about being subliminally presented with them. Within each of the two conditions participants either were or were not actually subliminally presented with the words. They found that only within the condition in which participants were not told about being primed but actually were primed did the typical memory effects occur (compared to the other three conditions). Therefore, as John Bargh recently put it, trying to be persuaded by subliminal information that you are aware of "is something like trying to tickle yourself; priming doesn't work if you're aware of it" (Carey 2007, 5).

Subliminal Advertising

As Epley et al. (1999) put it in their SKEPTICAL INQUIRER article, "For some, the bottom line of research on subliminal persuasion is, well, the bottom line—whether the effects of subliminal stimuli can be harnessed in a consumer setting." As Epley and colleagues noted, and as is the case for most of the

research cited in this article, research showing effective demonstrations of subliminal persuasion has been done in laboratory settings in which subliminal presentations are highly controlled. Nevertheless, given the consistency of the research reviewed, the findings can be applied to real life.

First, care must be taken to maintain a truly subliminal message; therefore techniques similar to subliminal self-help recordings will probably not work because the person is told of the presence of subliminal primes. Second, it seems that preexisting motivations are needed in combination with a congruent subliminal prime to push someone's initial leanings into a specific direction (e.g., brand). What this means is that subliminally priming someone who is sitting on their couch watching TV will probably not work; however if subliminal primes can be used within specific contexts that match a person's preexisting general motive, such as priming a certain type of ice cream at an ice cream shop, a certain type of computer at a computer store, or even a certain type of beverage at a vending machine, then subliminal persuasion may be more successful (Karremans et al. 2006).

If you subliminally expose (or "prime") people with words reminiscent of old age (e.g., old, gray, wrinkle), it will temporarily have an effect on their behavior, such as cause them to remember less.

In the end, the available evidence to date does not allow for a dismissal of the potential for subliminal persuasion techniques to have an influence on people's preferences and behaviors in their everyday world. It is important, then, not to ignore the possibility of being persuaded by subliminal information. Becoming aware of the many ways in which people will attempt to get us to do things (either blatantly or subtly) will allow us to be more critical consumers of our world. □

References

Andersen, S.A., G.B. Moskowitz, I.V Blair, and B.A. Nosek. 2007. Automatic thought. In *Social Psychology: Handbook of Basic Principles*, 2nd edition, ed. by E.T. Higgins and A. Kruglanski, 138–175. New York: Guilford.

Bargh, J.A. 2002. Losing consciousness: Automatic influences on consumer judgment, behavior, and motivation. *Journal of Consumer Research* 29(3):280–285.

———. 2006. What have we been priming all of these years? On the development, mechanisms, and ecology of nonconscious social behavior. *European Journal of Social Psychology* 36(2):147–168.

Bargh, J.A., and T. L. Chartrand. 2000. The mind in the middle: A practical guild to priming and automaticity research. In *Handbook of Research Methods in Social and Personality Psychology*, ed. by H.T. Reis and C.M. Judd, 253–285. New York: Cambridge University Press.

Bargh, J.A., M. Chen, and L. Burrows. 1996. Automaticity of social behavior: Direct effects of trait construct and stereotype activation on action. *Journal of Personality and Social Psychology* 71(2):230–244.

Beatty, S.E., and D. Hawkins. 1989. Subliminal stimulation: Some new data and interpretation. *Journal of Advertising* 18(3):4–8.

Carey, B. 2007. Who's minding the mind? *New York Times*, August 30. Available online at www.nytimes.com.

Cooper, J., and G. Cooper. 2002. Subliminal motivation: A story revisited. *Journal of Applied Social Psychology* 32(11):2213–2227.

Dehaene S., and L. Naccache. 2006. Can one suppress subliminal words? *Neuron* 52(3):397–399.

Dijksterhuis, A., H. Aarts, and P.K. Smith. 2005. The power of the subliminal: On subliminal persuasion and other potential applications. In *The New Unconscious*, ed. by R. Hassin, J.S. Uleman, and J.A. Bargh, 77–106. New York: Oxford.

Dijksterhuis, A., T. L. Chartrand, and H. Aarts. 2007. Effects of priming and perception on social behavior and goal pursuit. In *Social Psychology and the Unconscious: The Automaticity of Higher Mental Processes*, ed. by J.A. Bargh, 51–131. New York: Psychology Press.

Dijksterhuis, A., J.A. Bargh, and J. Miedema. 2000. Of men and mackerels: Attention, subjective experience, and automatic social behavior. In *The Message Within: The Role of Subjective in Social Cognition and Behavior*, ed. by H. Bless and J.P. Forgas, 37–51. Philadelphia: Psychology Press.

Dijksterhuis, A., P.K. Smith, R.B. van Baaren, and D.H.J. Wigboldus. 2005. The unconscious consumer: Effects of environment on consumer behavior. *Journal of Consumer Psychology* 15(3):193–202.

Dijksterhuis, A., R. Spears, T. Postmes, D.A. Stapel, W. Koomen, A. van Knippenberg, and D. Scheepers. 1998. Seeing one thing and doing another: Contrast effects in automatic behavior. *Journal of Personality and Social Psychology* 75(4):862–871.

Devine, P.G. 1989. Stereotype and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology* 56(1): 5–18.

Epley, N., K. Savitsky, and R.A. Kachelski. 1999. What every skeptic should know about subliminal persuasion. SKEPTICAL INQUIRER 23(5):40–45, 58.

Glaser, J., and J.F. Kihlstrom. 2005. Compensatory Automaticity: Unconscious volition is not an oxymoron. In *The new unconscious*, ed. by R. Hassin, J.S. Uleman, and J.A. Bargh, 171–195. Oxford: Oxford University Press.

Greenwald, A.G., E.R. Spangenberg, A.R. Pratkanis, and J. Eskenazi. 1991. Double blind tests of subliminal self-help audiotapes. *Psychological Science* 2(2):119–122.

Karremans, J.C., W. Stroebe, and J. Claus. 2006. Beyond Vicary's fantasies: The impact of subliminal priming and brand choice. *Journal of Experimental Social Psychology* 42(6):792–798.

Macrae, C.N., and L. Johnston. 1998. Help, I need somebody: Automatic action and inaction. *Social Cognition* 16(4):400–417.

Mather, R.D., and A. Romo 2007. *Automaticity and Cognitive Control in Social Behavior.* Southlake, TX: Fountainhead Press.

Moore, T.E. 1992. Subliminal perception: Facts and fallacies. SKEPTICAL INQUIRER 16(3):273–281.

Nisbett, R.E., and T.D. Wilson. 1977. Telling more than we can know: Verbal reports on mental processes. *Psychological Review* 84(3):231–259.

Phelps, E.A. 2006. Emotion and cognition: Insights from studies of the human amygdala. *Annual Review of Psychology* 24(57):27–53.

Pratkanis, A.R. 1992. The cargo-cult science of subliminal persuasion. SKEPTICAL INQUIRER 16(3):261–272.

Pratkanis, A.R., and E. Aronson. 2001. *Age of Propaganda: The Everyday Use and Abuse of Persuasion.* New York: Henry Holt and Company LLC.

Randolph-Seng, B., and M.E. Nielsen. 2007. Honesty: One effect of primed religious representations. *The International Journal for the Psychology of Religion* 17(4):303–315.

Satpute, A.B., and M.D. Lieberman. 2006. Integrating automatic and controlled processing into neurocognitive models of social cognition. *Brain Research* 1079:86–97.

Strahan, E.J., S.J. Spencer, and M.P. Zanna. 2002. Subliminal priming and persuasion: Striking while the iron is hot. *Journal of Experimental Social Psychology* 38(6):556–568.

Vallacher, R.R., and D.M. Wegner. 1987. What do people think they're doing? Action identification and human behavior. *Psychological Review* 94(1):3–15.

Wegner, D.M. 2005. Who is the controller of controlled processes? In *The New Unconscious*, ed. by R. Hassin, J.S. Uleman, and J.A. Bargh, 19–36. New York: Oxford University Press.

Modern-Day DaVinci's ROM

Range of Motion or Rip Off Machine?

A supposedly revolutionary (and remarkably expensive) exercise machine called the ROM makes amazing claims in slick, high-profile advertisements. Can it really offer a complete workout in four minutes? The claims—and the machine—are put to the test.

BENJAMIN RADFORD

Ah, the quest for the perfect exercise machine. From the Thighmaster to the Bowflex, people all over the world (and chubby Americans in particular) have been subjected to countless ads for "new and revolutionary" exercise products. People spend billions of dollars each year on exercise equipment, and plenty of companies want a cut.

Of course, just because people are buying the machines doesn't mean they are using them; in fact studies show most people don't. Part of the reason is that exercise is of course, by definition, work. People are lazy; they want maximum results with minimum effort and time investment. Therein lies the genius of the "revolutionary" ROM (Range of Motion) machine. According to its ads, the ROM machine

should only be used for exactly four minutes per workout—not three minutes fifty seconds, not five minutes. During those 240 seconds, you'll be getting the equivalent of twenty to forty-five minutes of aerobic exercise, forty-five minutes of weight training, and fifteen to twenty minutes of stretching—all at the same time!

The ROM has been featured in actual or *de facto* advertisements in *Scientific American*, *Playboy*, *Vanity Fair*, *Esquire*, *Time*, the Sharper Image catalog, and *Forbes*. As the ads are quick to point out, the machine was the "Winner of the 1991 *Popular Science* award for 'Best of What's New' in Leisure Products."

The ROM, according to its promotional literature, is "an extraordinary new machine engineered precisely for the new understanding of the human body" (whatever that means) and invented by John Pitre (whoever that is). You might assume that the person who designed the ROM has a background in sports medicine or physiology. Actually, John Pitre is not an exercise physiologist, trainer, or doctor but instead "an internationally known artist and inventor" who refers to himself as a "modern-day DaVinci."

The ROM Pitch

Pitre's workout machine is touted as both a revolution in fitness and a piece of fine art. (Its infomercial displays the exercise machine in what seems to be an art museum, nestled comfortably between an early Jackson Pollock and perhaps a Renoir.) So if you're a pot-bellied, wealthy socialite who wants a four-minute workout in the art-gallery wing of your mansion, you can break a quick sweat in the company of your Rodin. The upper-crust ad campaign is understandable when you see the ROM's price tag: $14,615 (though that does include shipping). As Temme admits, "It's the most expensive piece of exercise equipment by a great margin, but despite that it's the least expensive way to exercise, because if a person plans to live for another thirty years, this machine only costs $1.25 per day." By that logic, perhaps ROM machines should be bought for toddlers as birthday gifts since they can expect to live about seventy-five more years, dropping the cost to less than fifty cents per day.

You can probably find some good used exercise equipment in the classified ads, garage sales, or Goodwill for about $100. Or for a mere $14,516 more, you can have your own ROM. There is another option: a franchise called Quick Gym, which offers the ROM machines for use. Family memberships cost $100 per month plus a one-time registration fee.

It all sounds too good to be true. Does "the new understanding of the human body" really allow the ROM to condense the benefits of nearly two hours of aerobic exercise, stretching, and weight training into exactly four minutes?

Scientists, Skeptics, and 'Experts'

The ROM literature contains a very curious contradiction. On one hand, the company proudly touts experts and scientific studies that demonstrate the wonders of their machine. But information about the ROM by its main promoter, Mr. Temme, is at the same time rife with dismissive scorn for experts and scientists. Temme freely admits that doctors and exercise professionals are generally skeptical, noting, "Since 1990, the biggest marketing problem we have had is that almost all so-called 'exercise experts' who know nothing about our ROM machine and have never tried a four-minute ROM workout, will happily declare that a four-minute complete workout is absolutely impossible and that it flies in the face of everything they believe in and have learned. The same 'experts' become immediate believers after only a single four-minute ROM workout."

EXERCISE IN EXACTLY 4 MINUTES PER DAY
Winner of the 1991 Popular Science Award for the "Best of What's New" in Leisure Products
BEST OF WHAT'S NEW
$14,615
ROM • MANUFACTURED IN CALIFORNIA SINCE 1990
TIME IS IT. Over 92% of people who own exercise equipment and 88% of people who own health club memberships do not exercise. A 4 minute complete workout is no longer hard to believe for all the people who since 1990 have bought our excellent Range of Motion machine (ROM). Over 97% of people who rent our ROM for 30 days wind up purchasing it based upon the health benefits experienced during that tryout, and the ROM performance score at the end of each 4 minute workout that tells the story of health and fitness improvement. At under 20 cents per use, the 4 minute ROM exercise is the least expensive full body complete exercise a person can do. How do we know that it is under 20 cents per use? Over 90% of ROM machines go to private homes, but we have a few that are in commercial use for over 12 years and they have endured over 80,000 uses each, without need of repair or overhaul. The ROM 4 minute workout is for people from 10 to over 100 years old and highly trained athletes as well. The ROM adapts its resistance every second during the workout to exactly match the user's ability to perform work. It balances blood sugar, and repairs bad backs and shoulders. Too good to be true? Get our free video and see for yourself. The best proof for us is that 97% of rentals become sales. Please visit our website at: www.FastExercise.com.
The typical ROM purchaser goes through several stages:
1. Total disbelief that the ROM can do all this in only 4 minutes.
2. Rhetorical (and sometimes hostile) questioning and ridicule.
3. Reading the ROM literature and reluctantly understanding it.
4. Taking a leap of faith and renting a ROM for 30 days.
5. Being highly impressed by the results and purchasing a ROM.
6. Becoming a ROM enthusiast and trying to persuade friends.
7. Being ignored and ridiculed by the friends who think you've lost your mind.
8. After a year of using the ROM your friends admiring your good shape.
9. You telling them (again) that you only exercise those 4 minutes per day.
10. Those friends reluctantly renting the ROM for a 30 day trial.
Then the above cycle repeats from point 5 on down.
The more we tell people about the ROM the less they believe it.
From 4 minutes on the ROM you get the same results as from 20 to 45 minutes aerobic exercise (jogging, running, etc.) for cardio and respiratory benefits, plus 45 minutes weight training for muscle tone and strength, plus 20 minutes stretching exercise for limberness/flexibility.
"ROM is the best time management tool ever."
Anthony Robbins
Motivational speaker Anthony Robbins calls the ROM a fantastic time management tool. He owns 3 ROM machines: one at his home, one at his resort in Fiji, and one that travels with him to all his seminars.
Order a FREE DVD or video from www.FastExercise.com or call (818) 787-6460
Factory Showroom: ROMFAB, 8137 Lankershim Blvd., North Hollywood, CA 91605
Fax: (818) 301-0319 • Email: sales@FastExercise.com
RENT A ROM FOR 30 DAYS. RENTAL APPLIES TO PURCHASE.

In fact, Temme blames the machine's steep price tag on skeptics! "When finally some people are seriously interested in buying a ROM machine and they have no problem with the price, they would still want to make certain that they are not making a big mistake and they would like to have the advice from an 'expert' such as a personal trainer or a doctor. Not to anyone's surprise these 'experts' will immediately declare that there is no such thing as a four minute workout, because if there were such a thing they certainly would know about it, in fact the whole World [*sic*] would know about it. Experts kill a lot of ROM sales leading to low number of sales, leading to low volume manufacturing, leading to high manufacturing and sales cost."

In the literature and Web site for the ROM, Temme (2008) shows a very familiar defensiveness about anyone who questions his extraordinary claims: "Experts are the guardians of the status-

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quo because they do the following circle [*sic*] reasoning: 'If this new insight were true, we would certainly know about it because we are experts, but because we do not know about this new insight it must be false.' . . . Columbus had that same 'expert' problem when he tried to raise money for his expedition around the earth. The problem was that at his time the Earth was still flat in the minds of people and 'experts' alike.[1] . . . It took Columbus twelve years until he finally found the young and inexperienced royal couple of Ferdinand and Isabella of Spain who were willing to throw all caution to the wind by not listening to their court cartographers. They took a leap of faith and were willing to give it a shot. The rest is history. With the ROM it is the same way." So behind the sleek, ubiquitous full-page ads in *Scientific American*, it seems that the ROM promotional materials display the antiscientific "misunderstood genius" claims typical of pseudoscientific crank literature.

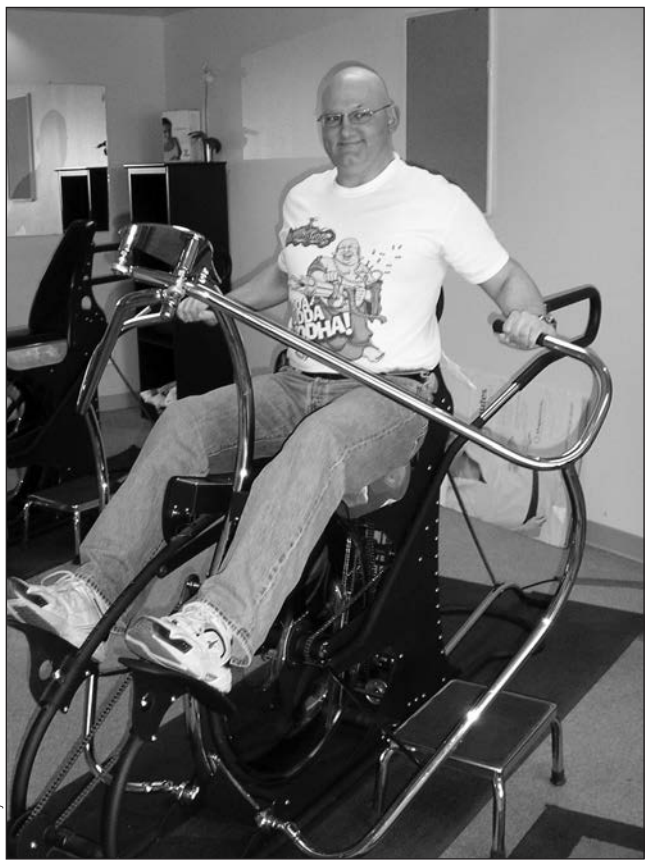


Photo by Dan Harrod

Author Benjamin Radford tests the Range of Motion exercise machine at an Albuquerque, New Mexico, gym.

In one section of the ROM machine Web site (under "Related Topics"), Temme is remarkably vindictive about any expert or journalist who does not fully endorse his claims about the machine. One science blog writer, Jim Fiore, is referred to as "an ignorant expert"; a blog facilitated by the American Council on Exercise is called "totally hilarious for its stupidity"; a Reuters news story that questions his claims is labeled "another gutless piece of journalism." And so on. The tactic is clear: ridicule and show contempt for anyone who dares to question his claims.

Critics were invariably dismissed if they themselves hadn't actually tried the machine (because of course anecdote and personal experience are far more valid than well-controlled scientific studies). Dr. Harriet Hall, for example, wrote about the machine on a Web site (Hall 2008): "I consulted experts in several disciplines. The consensus was that four minutes' exercise is better than none, but that the ROM provides a complete workout only if you make up your own definition of *complete workout*." Temme's response to Hall's criticisms was to note that "This undaubtedly [*sic*] excellent researcher, Harriet Hall MD, was able to draw all these negative conclusions based upon her expertise gathered during a distingueshed [*sic*] career in the Air Force. She did not have to bother with such simple details as trying the ROM herself . . ." (see www.fastexercise.com/?LP=92).

Apparently Hall's medical degree, columns and books, and years of activism in fighting for evidence-based health care do not qualify her to accurately judge the merits of the ROM unless she mounts the machine and tries it herself. Not wanting to be accused of poor research (at least not by people without access to a dictionary), I decided to try it. Any conclusions I came to about the machine would be based not just on the scientific evidence but also on an allegedly far superior form of knowledge: personal experience.

Putting the ROM to the Test

As it happened, there was a Quick Gym franchise nearby, with three ROM machines ready to go. I'd never seen $45,000 worth of exercise equipment in so small a space, but there they were. The short exercise time is a great boon to the franchise: unlike a treadmill or workout bench that might be occupied for an hour or more at a regular gym by one person, each ROM user is in and out in ten minutes.

I spoke to the Quick Gym representative behind the round white desk, a pleasant woman named Penny Edwards, MD. Edwards—who I later determined is almost certainly not in fact a medical doctor—assured me that the ROM was revolutionary. I asked about the credentials of the ROM's designer, Mr. Pitre. She pointed to a large coffee-table book of art on display atop a nearby table. I flipped through it, looking at colorful (if very generic and commercial) New Agey paintings of leaping dolphins, celestial events, and demure nudes in forests.

"I understand he's an artist," I said to "Dr." Edwards, "but I'm not sure that qualifies him to create an exercise machine. My uncle is an artist, but that doesn't mean he can design a revolutionary exercise machine." Edwards sort of nodded and said that Pitre had other qualifications, but she didn't offer any or even seem familiar with what they might be. We both agreed that regardless of Pitre's credentials in designing exercise machines, either the ROM worked as promised or it didn't.

I signed a release, did a few quick stretches, and prepared to be amazed. The machine itself has two different exercises, a rowing machine on the front and a stair-stepper on the back. It is sleek and stylish, with a resistance chain under polished chrome and black enamel. I started off with the seated, upper-body rowing workout. Four minutes later, my muscles got a bit of a workout, though if I'd done four minutes of push-ups

or jogging, I'd have felt just as exercised, if not more so. The stair-stepper was more difficult and required some deep knee bends. In both exercises, a red light timer counts down the seconds while another measures the gradually increasing resistance. At the end, I climbed off the machine and accepted the small cup of lukewarm water handed to me. I picked up some brochures and left.

Unlike, apparently, Hall and any other skeptics who have not spent eight minutes getting the most fantastic exercise known to mankind, I *am* qualified to pass judgment on the ROM, and my judgment is that it's a load of bullshit. I jog regularly and know for a fact that I didn't get anywhere near forty-five minutes' worth of aerobic exercise during that time—or forty-five minutes of weight training or twenty minutes of stretching.

Scientific Studies about the ROM

Though Temme and other ROM promoters dismiss experts and scientists, they are eager to cite experts and scientists when they think it will help sell the $14,615 machine. The ads and promotional literature list about ten studies that they suggest prove the ROM's amazing claims. At first glance, it looks quite impressive; it includes studies from publications such as the *Journal of Physiology*. If you actually read the studies, however, you find that all but two are simply papers on the subject of high-intensity workouts in general and have nothing to do with the ROM.[2]

The ROM literature cites a grand total of *two* studies that actually used the ROM machines. The highlighted one was conducted in 1995 at the University of Southern California, Los Angeles. The author of the study, Bob Girandola, is quoted in ROM brochures as saying, "The ROM is an excellent mode of training, affecting both upper and lower body, and we would strongly recommend this device for exercise for any individual" (Girandola 1995).

However, Girandola has since distanced himself from the company's use of his work, pointing out that it "was NOT [emphasis in original] a published research study and I would never recommend the ROM for just four minutes" (quoted in Bublitz 2005). It's not surprising that the study was never published because a closer look reveals a badly flawed methodology. It compared eighteen student volunteers who exercised for an average of six minutes per day, five days per week, for thirty-eight days. While the ROM users did indeed increase their aerobic capacity over the course of the study, starting *any* exercise regimen would have the same effect.

Oddly, the study had no real control group. Instead of assigning some students to do an equivalent amount of exercise on a different exercise machine (or using different methods such as jogging), the control group was composed of people getting no exercise at all! This same problem is evident in the only other study that used the ROM, one conducted in the Netherlands in 2007 (the results were "published" in a one-page, five-paragraph supplement). The question is not whether those who used the ROM machine increased their aerobic capacity, since *any* aerobic exercise will do that; instead the question is whether the ROM is any better than other exercise equipment and regimens. There's no evidence in either of the studies that the answer is yes.

You'd think that such a revolutionary exercise device that has been around for nearly twenty years would have at least one published study or research report to back up its amazing claims. Though Pitre, Temme, and the ROM company apparently haven't done any real testing, others have.

The American Council on Exercise (1999), a nonprofit organization dedicated to promoting the benefits of physical activity and protecting consumers against ineffective fitness products, put the ROM to the test in 1999. The study concluded that "The manufacturer's various claims—that users could achieve a total aerobic workout, a total-body resistance workout and the dynamic flexibility workout of a static stretching routine in just four minutes—were simply not true. Moreover, its claim of impacting weight loss. . .was also greatly exaggerated." The study was published in the March/April 1999 issue of *ACE FitnessMatters*.

And what of the much-touted "Best of What's New" designation in *Popular Science*? It seems that is true—an "award" based more on advertising than on science. Even if there's no good science behind the product, the company has been careful to associate itself with science. The full-page ads for the ROM in *Scientific American* were right about one thing. A sidebar states, "The more we tell people about the ROM the less they believe it." That was certainly true for me.

It seems that the ROM is little more than a stylish, glorified exercise machine not unlike any other costing one-hundreth the price. You're paying for pretension and packaging instead of proven efficacy. Then again, you're also paying for a masterpiece by a modern-day DaVinci. □

Acknowledgements

Thanks to Dan Harrod for his assistance in this investigation and to Ron Lloyd for suggesting this investigation.

Notes

1. At the time that Columbus sailed for America, most people knew that the world was round; it had been noted by Aristotle in the third century that Earth cast a curved shadow during eclipses. The experts did scoff at Columbus, not because they believed in a flat Earth but because they believed India—his destination—was too far for Columbus to reach on his voyage. It is ironic that Temme uses this example, as the skeptical naysayers turned out to be correct.

2. The list of studies is available online at www.fastexercise.com/studies.asp.

References

American Council on Exercise. 1999. 'Four Minutes To Fitness' Claim Is No Exercise Shortcut, American Council on Exercise Study Proves. Press release dated March 23, available online at www.acefitness.org/media/media_display.aspx?NewsID=67.

Bublitz, Todd. 2005. Aerobics—ROM Exercise machine. January 20. Available online at http://en.allexperts.com/q/Aerobics-2267/ROM-Exercise-machine-1.htm.

Edwards, Penny. 2009. Personal interview at QuickGym location, February 18.

Girandola, Bob. 1995. (Untitled letter about unpublished ROM study). Department of Exercise Sciences, University of Southern California, Los Angeles.

Hall, Harriet. 2008. Four minute exercise machine. Science-based medicine Web site, September 16. Available online at www.sciencebasedmedicine.org/?p=205.

ROM: The 4 Minute Workout. 2004. Promotional DVD published by Fast Exercise.

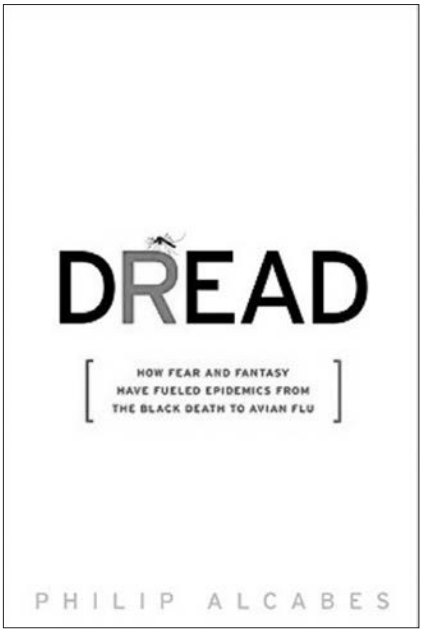
Temme, Alf. 2008. Guardians of the Status Quo. Available online at www.guardiansofthestatusquo.com/?PageID=116.

———. 2008. Why Is It So Expensive? Available online at www.whyisitsoexpensive.com/.

The Varied Concepts of 'Epidemic' and Our Varied Reactions

PETER LAMAL

Dread: How Fear and Fantasy Have Fueled Epidemics from the Black Death to Avian Flu. By Philip Alcabes, Public Affairs, New York, 2009. ISBN: 978-1-58648-618-1. 312 pp. Hardcover, $26.95.



As I read the new book *Dread: How Fear and Fantasy Have Fueled Epidemics from the Black Death to Avian Flu* by Philip Alcabes and now write this review, Mexico, the U.S., and other countries are experiencing an outbreak of swine flu. The World Health Organization (WHO) issued a warning that the world is now in a flu pandemic. Just what is a pandemic? There are slightly different definitions. For the WHO, a flu pandemic is the sustained transmission of a particular flu strain in at least two regions of the world. A dictionary of medical terms defines a pandemic as an epidemic that becomes very widespread and affects a whole region, a continent, or the world. In the current situation reference is often made to the worst pandemic in history, the 1918–1919 Spanish flu epidemic that killed an estimated 20 million to 50 million people worldwide.

To their credit, experts on flu outbreaks have made clear that predicting the scope of a flu outbreak is dicey, as illustrated by the U.S. government's famously wrong guess in 1976 about a swine flu pandemic that never materialized. The current strain of swine flu H1N1, may not even do as much damage as the usual winter flu outbreaks. At the same time, however, flu viruses are very unpredictable, and today's strain could mutate at any time, becoming either more dangerous or more benign.

Philip Alcabes's *Dread* is particularly relevant during this and other periods of great concern about epidemics. At the outset, Alcabes points out that there is no consensus about what an epidemic is. A central point of *Dread* is that there is an ongoing mismatch between the human costs of disease and the rhetoric about epidemics. According to Alcabes, more than 100,000 Americans die every year as a result of accidents. But we don't speak about an epidemic of accidents in the U.S. There are about 14,000 deaths from AIDS in the U.S. annually, providing grounds for continuing warnings about the perils of drugs and sex, but pneumonia and kidney failure are far more common causes of death. There is no talk about them as public-health crises. Why such a difference in public reaction? One answer, says Alcabes, is that epidemics, real or imagined, provide opportunities to convey messages; much of this book is devoted to describing and analyzing the contexts into which such messages have been conveyed. Pharmaceutical companies suggest an impending epidemic of cervical cancer if the vaccine against human papillomavirus is not used. The hyped pseudo-epidemic of autism has prompted parents in Britain and the U.S. to demand that the MMR (mumps, measles, and rubella) vaccine, erroneously linked to autism, not be used (SI, November/December 2007; May/June 2009).

Why is the hype about epidemics (however defined) often much greater than the damage they do? Because, says Alcabes, of our fear of death and also the prospect of social disruption. The mass media contribute greatly to the hype. A

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New York Times article of April 28, 2009, cites medical professionals as saying that the public would perhaps be less hysterical without the saturation coverage of the flu outbreak on cable news networks and the amount and speed of information on the Internet. "Typifying the sometimes overheated coverage, a Fox News Channel commercial . . . exclaimed that 'swine flu plagues the nation' and urged viewers to tune to prime-time coverage."

Dread examines epidemics and their reputed causes throughout Western history, starting with the ancient Greeks and Romans. It considers epidemics from three interconnected perspectives. First, an epidemic is a physical event, a microbial disturbance. Second, an epidemic precipitates a social crisis. An epidemic also involves a narrative: "We tell ourselves stories about ourselves, accounts that make sense of what we see happening as well as what we fear (and hope) will happen" (5).

The chapter "Managing the Imagined Epidemic" is devoted to pseudo-epidemics, including the autism pseudo-epidemic. Another subject that has been treated by many as an epidemic is obesity, and Alcabes maintains that it is not the serious problem that it is often characterized as being by the medical community and the media. The case that he makes may well persuade many readers to seriously reconsider their conventional views about obesity. There are now books about supposed epidemics of macular degeneration, hepatitis C, anxiety, asthma, and restless-leg syndrome, among others.

Many readers may not find the historical material of Chapter 1 regarding such matters as the etymology of *plague* and the ancient, medieval, and Renaissance sources of today's concept (or differing concepts) of epidemics to be of great interest. Also, Alcabes does not acknowledge the importance of human behavior in the spread of viruses and bacteria. For example, changes in individuals' behavior, behavior changes that did not include moralizing, could no doubt have greatly lessened the spread of AIDS.

This book addresses more topics than its title might suggest. In addition to the historical material about epidemics, Alcabes also provides material to support his view that epidemics always occur in societies whose political, economic, and intellectual structures and interests determine their response to the epidemics.

By early May news reports on the swine flu included two points: the outbreak did not appear to be as deadly as first feared, but the virus could roar back during the usual fall flu season, as was the case with the incomparable 1918 Spanish flu. The WHO said up to two billion could be infected by swine flu if the pandemic lasts two years. Independent experts, however, pointed out that many of those would show no symptoms and would not die.

But we can continue to experience dread. □

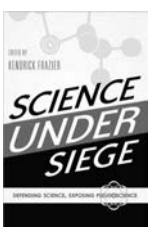
NEW BOOKS

Listing does not preclude future review.

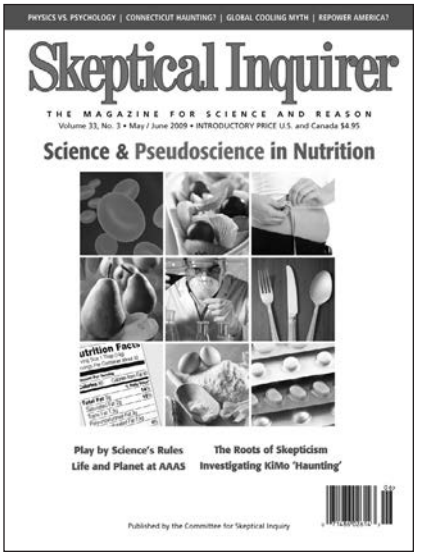
BIGFOOT: The Life and Times of a Legend. Joshua Blu Buhs. University of Chicago Press, Chicago, 2009. 279 pp. $29 (£20 in U.K.), hardcover. Buhs, an independent scholar, doesn't believe in Bigfoot—"I still don't think that Bigfoot exists"—but he makes his way through the forest of myths, mysteries, and pseudoscience surrounding the supposed creature to write a cultural history of Bigfoot. Part of that history is the Bigfoot enthusiasts and researchers themselves, as well as the skeptics who have repeatedly investigated and debunked their claims. Buhs sketches many of these people, the claims, controversies, debates, and debunkings and provides a five-page "dramatic personae" to help keep them all straight.

REAL OR FAKE: Studies in Authentication. Joe Nickell. University Press of Kentucky, Lexington, KY, 2009. 256 pp. $35, hardcover. Indefatigable scholar and investigator Joe Nickell, who among his other skills is an authentication specialist, draws on his years of experience to provide a guide for readers interested in distinguishing historical pieces from forgeries or reproductions. He details the methods used to authenticate or dismiss documents, photographs, artwork, and other artifacts. He outlines the importance of provenance (the origin or derivation of the artifact), content (the document or artifact's "internal" evidence), material composition (what they are made of), and scientific analyses (properly conducted and correctly assessed) in authentication. Nickell begins each of the three sections—Documents, Photographs, Other Artifacts—with a chapter on authentication and then adds chapters describing cases he has investigated.

SCIENCE UNDER SIEGE: Defending Science, Exposing Pseudoscience. Edited by Kendrick Frazier. Prometheus Books, Amherst, New York, 2009. 370 pp. $21.98, softcover. Here is a new collection of thirty-seven articles selected from the SKEPTICAL INQUIRER on timely topics within science and along its borderlands. They were chosen for their interest, significance, and relevance to today's scientific, political, social, and cultural debates. Articles include Carl Sagan's final Q&A session on science and reason; Ann Druyan's "Science, Religion, Wonder, and Awe"; a provocative piece contending that we overreacted to the attacks of September 11, 2001; five articles on the evolution vs. intelligent design controversy; chapters on AIDS denialism, the anti-vaccination movement, animal-rights extremists, the memory wars, the predator panic, vacuum energy, magnet therapy, and supposed "energy-healing" experiments; philosopher Mario Bunge's examination of "The Philosophy of Pseudoscience" and physician Bruce Flamm's exposé on a notorious prayer study; and many others by expert investigators exposing a variety of pseudoscientific and paranormal claims.



THE UNIVERSE: Order without Design. Carlos I. Calle. Prometheus Books, Amherst, NY, 2009. 264 pp. $27.98, hardcover. Calle, a laboratory director and senior research physicist at the NASA Kennedy Space Center, explores the latest and sundry theories about the origins and evolution of the cosmos. He begins with a review of the milestones of twentieth-century astrophysics: the discovery of cosmic background radiation in the 1960s that led to confirmation of the big bang theory; the inflationary theory of universe expansion, recently confirmed; the formulations of the essential laws of physics. Do the laws of physics suggest a Grand Designer, as some suggest? He describes the view from string theory that our universe may be one of an infinite number of universes and the recent model that the big bang may not be the moment of creation but the bridge to a past filled with endless cycles of creation and destruction.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Science & Pseudoscience in Nutrition
Play by Science's Rules
Life and Planet at AAAS
The Roots of Skepticism
Investigating KiMo 'Haunting'
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Science and Pseudoscience in Nutrition

I have been an SI subscriber for many years and was pleased to see the article "Science and Pseudoscience in Adult Nutrition Research and Practice" (May/June 2009), since I have felt for a long time that much of what is reported in the media and believed by most individuals is not based on fact. The article, however, left me with a couple of questions.

I wonder why the author singled out "white rice and white potatoes" without mentioning white bread and white sugar, which seem to be even more universally attacked and are often lumped in with white rice and white potatoes by the "anti-proponents." One might be left to conclude there was some evidence that white bread and white sugar are harmful. Or were white bread and white sugar simply left out because there was no way to enumerate all common myths?

Also, the article touts the proven benefits of statins for "selected populations" but denies any value to a low-fat diet or the reduction in consumption of eggs and butter. It seems likely to me that the selected population that benefited from statins would also likely benefit from lowering the intake of foods high in saturated fat and cholesterol, but the article fails to mention it.

P. Jeming
Seattle, Washington

Dr. Reynold Spector's article is a gem. It hits right where it should. There are too many who love to refer to science as the source of all facts yet seem to have no real understanding of what the scientific method is. With all the quackery and deceit surrounding nutrition, we needed Dr. Spector's paper to bring some intelligence to the topic.

Frank Haneman
Clinton, Connecticut

It is refreshing to read an article that emphasizes the significance of good, sound scientific evidence in the area of nutrition. I believe that for most people Dr. Spector's advice is relevant. One area that needs further scientific exploration is the role of genetics, especially population genetics, in the metabolism of food. For example, it is my observation that people of non-European ethnicities who live in the United States often develop health problems that seem to be associated with their adoption of the "typical" U.S. diet. As the peoples of the world continue to move and mix, such issues will grow in importance.

Beall Fowler
Bethlehem, Pennsylvania

Dr. Spector states that a body mass index of 20–25 is optimal. The question is, optimal for what? Certainly not for mortality—those in the so-called overweight range of 25–30 have a lower mortality rate than those in the "normal" range of 20–25. Admittedly this is not easy to discover. Flegal et al. (*Journal of the American Medical Association*. 2005. 293(15):1861–7), for instance, titled their paper "Excess Deaths Associated With Underweight, Overweight, and Obesity" and stated in their conclusions that "Underweight and obesity, particularly higher levels of obesity, were associated with increased mortality relative to the normal weight category." However, inspection of their data reveals that the excess deaths associated with the overweight range are *negative*; this group had 86,094 *fewer* deaths than it would have had if it had the same death rate as the "normal" group. Other studies suggest that a BMI of 25 is optimal with respect to mortality.

It is not uncommon for authors of papers in medical journals to express their results in ways that make the factors that accompany overweight look worse than is suggested by their data. In a paper with the conclusion that "Increased body weight was associated with increased death rates for all cancers combined and for cancers at multiple specific sites" (Calle, et al. *New England Medical Journal*. 2003. 348(17):1625–38), the data actually showed, as I along with others pointed out in a subsequent issue (*New England Medical Journal*. 2003. 349(5): 502–4), that for 90 percent of the men in the study group, higher BMI was correlated with *less* cancer. Alas, this did not hold true for the women in the study group.

See for yourself. I believe that the first two papers are available free online, and I will be happy to send a reprint of my letter upon request.

Marshall E. Deutsch
med41@aol.com

I know you keep taking flak for it, but I encourage you to continue the trend of including articles that are skeptical of non-paranormal claims. As long as they are informative, written by experts, and direct us to further reading and sources confirming or furthering their analysis, I find them as valuable and engaging as anything else SI has published. Don't stop debunking the paranormal. But do include other stuff like this.

I've always wondered about exactly those issues: why is nutrition science so contradictory, and what am I supposed to believe? It's nice to have a starter kit for answering that question, a question that is, after all, quite important to all of us. That is an example of the kind of thing we don't hear elsewhere but need: well-sourced, educational, expert summaries to guide us through the fog of important issues and debates.

However, I have one question for Dr. Spector: I often see doctors make assertions about ideal weight goals, as in this case where Spector recommends maintaining a target BMI of 20–25 (pp. 37–38 and p. 41). But BMI is simply a ratio of height to weight. It takes no account of relative muscle mass. I once knew a drill instructor who had hardly any fat on her and whose physiological health was a far sight better than mine, yet she had a BMI in the "obese" range, which is perverse. She was quite the opposite of obese—and not at all unhealthy. Is there a reason BMI recommendations are asserted without making any qualifications for body fat or muscle mass? Or is reliance on BMI targets another practice we are taking too much for granted and should also question?

Richard C. Carrier
www.richardcarrier.info

Reynold Spector's article purports to be a rigorous review of the literature on nutrition

and science, but his assumptions about body weight reveal a bias against overweight and obesity. There is a large amount of epidemiological, pathological, and clinical data questioning the value of the BMI as a tool and of the range 20–25 being an optimal number. Anyone who has fairly well developed muscles will be in the overweight or obese category. The following sites reference some of these studies:

www.consumeraffairs.com/news04/2008/08/overweight_unhealthy.html
www.medicinenet.com/script/main/art.asp?articlekey=91769
http://junkfoodscience.blogspot.com/2006/11/obesity-paradox-1.html.

The whole area of overweight and obesity is so colored by bias that a true reading of the data is very difficult to sort through, but there is no straightforward data to uphold Dr. Spector's statements.

Also the assumption that weight is a simple result of calories eaten is not so simple. There are studies that find that overweight and obese people do not eat more than their "normal" weight counterparts. Also why can some overweight/obese people go on a starvation diet and lose weight and others become malnourished and develop bedsores and a compromised immune system? No simple answers to that question are available.

The idea that "There are of course a few obese individuals who have 'self discipline' and can lose weight and keep the weight off" is truly offensive and inaccurate considering the mass of data indicating that genetics contributes greatly to body weight.

The bias against the obese is so great that researchers have developed the term "normal weight obese" to describe a group of normal-weight people who have a high level of body fat. How about unfit or out of shape?

While I agree with many points in the article about the misuse of studies to promote foods and supplements, the bias undermines the rest of the paper.

Christine Young
Retired dietitian
tina_young@bellsouth.net

The article by Reynold Spector contains much food for thought. I read it over twice and once to my wife in an effort to digest it all. Dr. Spector does an excellent job in raising our skepticism of much of the nutritional advice in print, which is the primary thrust of his article.

For us lay readers, however, his advice on what we should eat is rather vague and general. He advises that we eat in "moderation," which would appear to mean not to go to extremes in diet and to eat as many calories as needed to maintain one's BMI between 20 and 25. He says we should eat a "balanced diet," which apparently means one containing "essential substances for which RDAs are known, such as essential amino acids and essential fatty acids listed in Table 1." He is highly critical of the Agricultural Department's food pyramid, which attempts to represent such a diet in concrete food terms that a lay person can understand. Although it was not the focus of his article, some of us lay readers might have appreciated a reference to a "balanced diet" guideline that we could understand (possibly an FDA publication?).

David W. Briggs
Marion, Massachusetts

Reynold Spector, MD, replies:

P. Jeming suggests including white bread and white sugar with white potatoes and white rice. I agree that in moderation, there is no scientific evidence (given a BMI of 20–25) that these are harmful. Jeming assumes that (given a BMI of 20–25) a low-fat diet (e.g., avoiding eggs and butter) is helpful. In fact, the government spent a fortune on a long-term randomized study comparing a low-fat diet to a normal-fat diet in the Women's Health Initiative. There was no difference in cardiovascular disease and death in the two groups (See the Journal of the American Medical Association *295: 655-666; 2006). There is no scientific reason to avoid eating one egg and buttered toast for a light breakfast.*

Beall Fowler raises the question about genetic factors in food metabolism. This is a very important topic and would require a full-length paper to discuss properly.

Marshall Deutsch raises questions with his interpretations of older data from 2003 and 2005. I would urge him to read reference 12 in my paper from 2006 that clarifies the issues he raises. I would also point out that the U.S. Public Health Service now considers overweight/obesity (BMI greater than 25) to be an "epidemic" in America. He should consult their Web site for the reasons why they believe this.

I thank Richard Carrier for his kind comments. He raises the question about persons with high BMIs due to increased muscle mass. He assumes that such people are healthy. To my knowledge, there is no convincing controlled data on this point. However, as a physician, my experience with such people as they become middle-aged is that they tend to become less muscled, fatter, and suffer from hypertension, heart disease, and stroke. I do not accept his premise that heavily muscled people are healthier over the long term.

Christine Young suggests I have bias against the overweight and obese. It is a truism that obesity is due to greater caloric intake than output. She should read the latest scientific data (see reference 12 in my article), which clearly shows that morbidity and mortality increase as body weight increases above a BMI of 25. It is also true that many obese individuals (when suggested they do so) can lose substantial weight with "self-discipline." This is just a plain fact. Finally, the U.S. Public Health Service considers overweight/obesity an "epidemic" as noted above—a causative factor in many diseases like hypertension and diabetes as well as early death.

David Briggs would like more detailed recommendations on what to eat and what to avoid. Beyond the general guidelines in my paper, which Briggs summarizes, there is no scientifically valid universal general guideline. Each person needs to find out what "works" for them. For example, some people need lots of bran/yogurt to keep their bowel movements regular; others don't. Many adults become lactose intolerant (as discussed in the paper) and can not tolerate milk products. "Experts" cannot pontificate on such points.

Finally, I thank Frank Haneman for his kind comments.

Playing by the Rules

Harriet Hall's article "Playing by the Rules" in the May/June 2009 issue was delightful, and I'll probably borrow some of her thoughts when discussing scientific thinking in my introductory biology courses. But I'd like to correct number 4 in her list of evidence contributing to the link between *Helicobacter pylori* and ulcers (p. 44). I'm assuming she's talking about Barry Marshall, who is famous for swallowing a broth containing the bacteria. Marshall developed uncomfortable gastritis as a result but not an ulcer. The infection went away. The drama probably did help provide momentum to the more standard research being done on the subject by Marshall and others. To see a nice, not-too-technical discussion of all this, Google the lecture Marshall gave when he won the Nobel Prize. It provides a detailed look at the way real scientists "play by the rules."

I caught this because I'd previously researched the topic for my young-adult book *Guinea Pig Scientists*, Henry Holt,

2005. His work is only briefly mentioned on p. 187 of my book, having been crowded out by some other amazing self-experiments, but I did read Marshall's original journal article.

Leslie Dendy
University of New
Mexico–Los Alamos
Los Alamos, New Mexico

Harriet Hall replies:

You are right: it was gastritis, not an ulcer. Thanks for the correction.

In her delightful and timely article on the rules to follow if one wishes to promote a scientific theory, Harriet Hall neglected to mention an essential component.

She begins with rule 1: Submit your hypothesis to proper testing. I maintain that first one must state the hypothesis in positive form (a rare occurrence among the evolution deniers). Simply saying, "I can't believe the hypothesis, therefore it is wrong" won't do.

After that, you may begin the testing, etc., that Hall describes.

Joe B. Gilbert
Houston, Texas

KiMo Theater 'Haunting'

I wanted to say how much I enjoyed the article utterly debunking the KiMo Theater ghost legend ("Ghosts, Doughnuts, and *A Christmas Carol*: Investigating New Mexico's 'Haunted' KiMo Theater," SI, May/June 2009). I thought author Benjamin Radford was being very polite in attributing the make-believe story to a bad memory while laying between the lines the more obvious explanation of shameless self-promotion. Particularly noteworthy was the thoroughness with which Radford annihilated the legend, but the most important point was his last comment about how the myth distressed the family of the dead boy. Penn Jillette regularly makes a similar point about the utter insensitivity of mediums claiming to contact dead relatives. Maybe if this is pointed out forcefully and frequently, it will undermine the oft-quoted justification that these fakers use, namely, bringing some "peace" into these troubled lives. It is essential to explain the harm that these stories cause in a personal, as opposed to methodological, way.

This leads to my real point. I think we should ask ourselves, "What is the point of writing skeptical articles?" I think the main audience for these articles should be believers, not skeptics. Writing for skeptics is carrying coal to Newcastle. The people who need to read these articles are believers. Even if very few believers read SI, it is a resource that skeptics can use in discussions with believers. For example, if I am ever confronted by the KiMo case in a discussion with a believer about the reality of ghosts, I now have a definitive debunking. If you accept this premise, then I think a logical conclusion is that we need fewer articles on scientific method and more articles on concrete cases like KiMo. I've never convinced a believer to be more skeptical by making a methodological argument. I have convinced plenty of them by specifically debunking a few cited examples of paranormal phenomena. As Radford mentioned in the KiMo article, these stories mutate and spread like wildfire, so stopping them before they get started is important. It is important because these stories hurt real people.

To this end, my concrete suggestion is to target the shows currently on TV originating paranormal drivel. What about a column that specifically debunks every episode? If the episode revisits a previously debunked story, provide a link to a previous issue of SI (e.g., the "A Haunting in Connecticut" article). If nothing much happens in the episode, summarize via a wry comment like "people are scared by normal house noises."

I'm proposing a quick reaction force to squelch the story before it has a chance to spread. I think this kind of critical scrutiny might have a chilling effect on the producers, who are just trying to make a buck. If we make it clear that we're going to ask them for their records and report if they refuse or don't have any, then they will find an easier way to make a living. Finally, as mentioned above, a postmortem on the collateral damage would bring home the human cost of the producers' irresponsibility. Documenting the anguish caused by these beliefs will reveal that it is not "all in good fun."

Chris Cole
chris@questrel.com

As a theater professional I have found it is a rare theater that does not have a "ghost" haunting it. As with the KiMo Theater, more often than not it turns out to be a story that is "so good it must be true."

Everything from ancient Native American burial grounds to sudden tragic deaths of small children has been invoked to explain the mysterious presences felt by my fellow staff and crew. As with many of these stories, none stood up to strict scrutiny.

One theater was supposedly on a burial ground but no evidence of the area being used for that purpose could be found when I looked into the matter. I found that the area had been used as a hunting ground but not as a burial ground.

At another theater a child supposedly died tragically. The story often told was of children from a nearby housing project who would sneak in late at night to play. One night security came in and one of the children—a young boy—hid in the grid over the stage. He reportedly fell to his death. This was a college theater and of course the events took place in the early days of the theater program—in other words, before any one presently there had direct knowledge of the events.

I decided to go through the microfilms of the local and Boston newspapers from the time and could not find any such incident reported. This made little difference to my fellow students who would repeat the story whenever something went wrong in a production.

I always found it odd that none of the ghosts seemed to come around when I was alone in any of these theaters. I do understand much of this. An empty theater is a very spooky place and the imagination can work overtime. This is particularly unsurprising when you consider that the people working there are being paid to use their imaginations.

When entering a dark space lit by a single lamp—the ghost light—steam pipes, ventilation fans, the sound the lighting system makes when being warmed up can make even a skeptic like me feel a cold chill from time to time. Thank you again for the well-written article. I doubt that it will change many minds but it is a very good example of why these stories catch on.

Joe Walker
jwalkmagic@comcast.net

I just finished the article on the Darnall ghost in the May/June SI. This article will be a classic in the skeptical literature on ghost hunters. Radford beautifully told the story and pointed out how ghost hunters mislead. The article is just what I've been looking for to use in my introductory psychology classes—a great piece on ghost hunters that not only debunks and shows how to do a proper investigation but tells a good story as well.

Terence Hines
Professor of Psychology
Pace University
Pleasantville, New York

Haunting in *Con*necticut?

Since horror writer Ray Garton repudiated the book he wrote on which *The Haunting in Connecticut* is based ("Demons in Connecticut," SI, May/June 2009), I wonder if he is going to "repudiate" the royalties as well?

David Maharaj
Toronto, Canada

Patients Do *Not* Correctly Predict Their Own Deaths

Dr. Hines's excellent critique ("Selective Memory at Work When Patients 'Predict' Own Death," SI, May/June 2009) of Sandeep Jauhar's January 6, 2009, *New York Times* essay on patients' ability to predict their own deaths spotlights the probable role of selective memory in perpetuating this clinical myth. I was a fellow in critical care medicine only a brief time before I began to hear frequent, almost reverential, repetitions of the purported wisdom and insights patients have into their own imminent demise.

My research tested this dubious impression prospectively in a busy surgical intensive care unit (T.J. Poulton and Butdorf MB. 1986. "Death in the ICU: Does the Patient Predict His Own Demise?" *Critical Care Medicine* 14(7): 614–616). For one year, we assiduously identified every patient who articulated to a caregiver the conviction or fear that they were about to die. Thirteen of 643 patients made such statements. Their thirty-day mortality rates were not different from those of age- and diagnosis-matched controls.

We found no physiologic, social, or situational factors that accounted for the conviction that one's death is imminent in the hospital setting. At the same time, we learned that those fearing death were among the sickest conscious patients in the ICU. Physicians caring for these patients produced more correct predictions of death or survival (70 percent accurate) than did the patients who anticipated death (38 percent accurate).

Magical, mystical thinking seems to put even highly educated clinicians in awe of the shocking but illusory "insights" patients may be having. An important bottom line is that caring and rational clinicians can reassure patients who believe they are dying that death is clinically unlikely and that such feelings are not uncommon—and, most often, incorrect. Then they can be real physicians and explore *why* their patient may be having such feelings and determine what might reduce their emotional or existential discomfort.

Thomas J. Poulton, MD
Professor of Pediatrics and Surgery
Marshall University School of Medicine
Huntington, West Virginia

Soft Science vs. Hard Science

Massimo Pigliucci, in his May/June 2009 column, refers to a 1987 article by Larry Hedges. In that article ("How Hard is Hard Science, How Soft is Soft Science?" *American Psychologist* 42: 443–455) are three graphs that show variations in measurements and their associated uncertainty of the fine structure constant and rest mass energies of the electron and the proton. Clearly there are problems with the estimates of uncertainty of the values measured. I think that there is general agreement that it is a very difficult task and frequently not done well. But in these three graphs the variation in the values measured is less than .1 percent (in two cases less than .01 percent). I would not then take Pigliucci's last sentence to heart because you might get as a common response, "Well, in physics, even if we have difficulty estimating the uncertainty, we do have a great deal of confidence and, I would say, humility in the face of truly having something to measure."

Steven Anderson
Seattle, Washington

Scientists and 'Environment Lobby'

I'm afraid that John Fleck's commentary ("The Great Global Cooling Myth and the Politics of Science") only succeeded in toppling a straw man.

The question is not whether a majority of *scientists* in the 1970s believed in anthropogenic global cooling. It is whether the "environmental movement"—that is, the political movement that uses environmental issues as a vehicle to promote its political agenda—was advancing the idea of anthropogenic global cooling. Anyone who lived through this time knows the answer is an emphatic yes—from Earth Day celebrations and political speeches to mentions in the popular press, including articles in both *Time* and *Newsweek*, global cooling and a looming ice age were everywhere. Whether there was any actual science to back up their claims was irrelevant; the aims were political, not scientific, and politicians and political groups, not scientists, were the movement's leaders.

While the "environmental" lobby has switched temperatures, their tactics are the same today as they were back then. Politicians and political groups (Al Gore and the IPCC, for example) dominate the movement, and their proposed "solutions" to global warming are the same as their solutions to global cooling were in the 1970s—and (probably not coincidentally) the same as leftist political goals have always been.

Any chance CSI can go back to being CSICOP and once again concentrate on science and pseudoscience, leaving politics to its sister publication *Free Inquiry*?

Anthony Schaller
Albuquerque, New Mexico

What Can We Do?

Yes, we are told on a daily basis about the greenhouse effect, climate change, using too much fossil fuel. Does anybody listen? Kendrick Frazier ("Life and Planet," SI, May/June 2009) is correct, what are we doing about it?

I go out to eat, and the restaurant menu is meat, meat, meat, every dish, three meals a day. We are told it takes forty times more fossil fuel to produce a pound of beef than a pound of soybeans; does anybody listen?

What can we do? Last year people started taking their bicycles to work instead of driving. The emerging means of transport around the world is the electric bicycle, followed by electric cars.

This is a good start. Some skeptics (I should say, some cynics) question the infrastructure and grid required to power electric vehicles: we are exchanging the internal combustion engine of a vehicle for an external combustion engine of a power plant. While it is true most electricity comes from coal plants, this can and will change. Already in Hawaii it costs more to generate electricity from coal than from solar voltaics, and the price of power in some southern states is about to also achieve parity with solar electricity. At that point people will buy solar panels.

Aside from China, the world has only been using coal and the other two fossil fuels on a large scale for about two centuries, and it will not take as long to come up with a substitute.

Kendrick Frazier also mentioned population control. Ironically, the problem is the solution; the current economic downturn means people cannot afford to have children.

I also see a shift in how we view the world. A plug-in hybrid can become the grid: during a power outage, your car in the garage could not only power your home, it could power your neighbor's. (Logically, a typical vehicle must use tens of kilowatts to power the vehicle, a typical home only uses from one to three kilowatts, so the vehicle's batteries could in effect become a local generator.) We have only become aware of this recently, and in this short time have started to make progress. We have already solved the other dire endings of the world—smog, the ozone hole, DDT.

Daniel Barker
Lakeland, Florida

Spaceships Are Not Impossible

Regarding the letter from Sid Deutsch in the May/June 2009 SI: I read his article, "Why Visiting Alien Spaceships Are Impossible" in the *Skeptical Briefs* newsletter, and on his argument that visiting aliens are impossible because spaceships are impossible, my conclusion is that, in the words of Stephen H. Schneider ("Climate Change: Skeptics vs. Deniers," SI, May/June 2009), he went "beyond skepticism to denial." His "proof" that spaceships are impossible reminded me of the famous quotation from Arthur C. Clarke: "When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong."

Many serious scientists have been hard at work on the scientific and technological basis for interstellar travel for many years, and the American Institute of Aeronautics and Astronautics has recently published a compilation of this work entitled *Frontiers of Propulsion Science* edited by Marc Millis and Eric Davis. In their prologue, the editors address Mr. Deutsch's argument: "Because existing technology is inadequate for traversing astronomical distances between neighboring stars (even if advanced to the limit of its underlying physics), the only way to circumvent these limits is to discover new propulsion science." They go on to say: "Objectively, the desired breakthroughs might turn out to be impossible, but progress is not made by conceding defeat." It seems to me that in his zeal to debunk UFOs, Mr. Deutsch is conceding defeat on scientific progress. "Breakthroughs have a habit of taking pessimists by surprise. . . ."

Frontiers of Propulsion Science is a wonderful example of Carl Sagan's viewpoint on scientific inquiry: ". . . at the heart of science is an essential balance between two seemingly contradictory attitudes—an openness to new ideas, no matter how bizarre or counterproductive, and the most ruthlessly skeptical scrutiny of all ideas, old and new. This is how deep truths are winnowed from deep nonsense." (*The Demon Haunted World*, page 304). I encourage Mr. Deutsch, and everyone else, to be open to new ideas on space travel and to appreciate the skeptical scrutiny these ideas are receiving in the scientific community. As well as identifying numerous concepts as worthy of further study, *Frontiers of Propulsion Science* shows why several concepts are not viable.

Avery Davis
Tucson, Arizona

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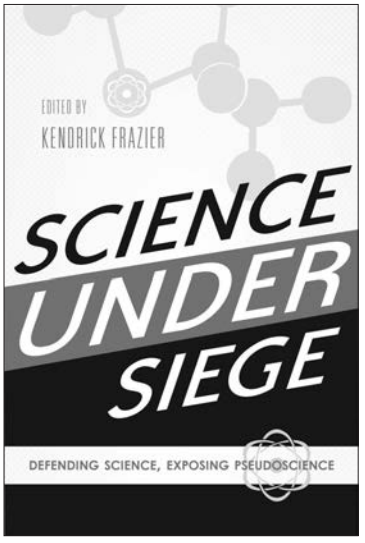

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KENDRICK FRAZIER (Albuquerque, NM) is editor of *Skeptical Inquirer* and former editor of *Science News*. He is a fellow of the American Association for the Advancement of Science.

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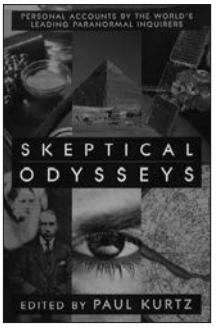

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Pablo's Picks

Eight Weird Psychic Comments Overheard at a Singles' Bar

1. "I psychically know your cell number, but give it to me, again, anyway."
2. "Do you know how to remove ectoplasm stains?"
3. "Think it's easy making love with the ghost of a dead girl hovering overhead?"
4. "I know Abe Lincoln."
5. "Buy me a drink and I'll predict a lottery number that will be drawn sometime in 2010."
6. "There's a grandfather-like specter over your right shoulder telling you to pay for all my drinks."
7. "Are you bi-spiritual?"
8. "What's your sign? Wait. Don't tell me. It starts with an A, T, G, C, L, S, P, or V, right?"

HIDDEN MESSAGES by Dave Thomas

The following letters are a simple substitution cipher. If R stands for L, it will do so everywhere. Solution is by trial and error. Hint: Look for patterns in words: for example, the scrambled phrase "JRXJ JRQ" might represent "THAT THE."

PUZZLE

"ZJD EDUFHFBG ZJNZ FK NLENFV BL KAFDGAD VFKJBGBEK HBV NGV ABXXFZK KRFAFVD."—ENUYJ CNUVB DXDEKBG

ANSWER KEY

As you decipher letters, keep track of them with the handy answer key below. If you've decided that R stands for L, simply write down an "L" above or below the "R" in the alphabetized row below, just as you would for the cipher itself. This builds a handy, easy-to-use reference guide for you.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

PREVIOUS PUZZLE SOLUTION: doesn't exist—this is the very first one!

Ask The Outlaw Skeptic

Dear Outlaw,

While at the local mall, I stepped inside a health-food store to check out the wares. As I scanned the shelves, a waiflike sales' clerk, Sunshine, approached me. During our conversation, she began extolling the benefits of fish oil for preventing heart disease, fighting depression, controlling weight, improving brain function, fending off cancer, and attracting cats. I walked out with two whole cases of fish-oil capsules. Was I duped?

—Fishful Thinking

Dear Fishful,

As is usually the case with most health-food nuts, Sunshine was only partially right . . . about a tiny sliver-in-a-pie-chart right. Fish oil, which contains omega-3 fatty acids, has been shown to be beneficial only for patients who have already had heart attacks or for possibly reducing triglycerides. In one surprising study, though, those who took fish-oil capsules twice a day for a month improved their free-style swimming times by a whopping 67 percent. Otherwise, almost all other claims are greatly exaggerated. If you still believe in these hyperbolic claims, however, then instead of wasting your hard-earned cash buying fish oil, why not just haul a few of the scaly rascals out of a local pond or lake, extract the oil using a power juicer, and drink up! In other words, my single-word answer is yes, you were. Happy bass burps, Fishful!

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International groups listings have been moved to our Web site: www.csicop.org

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